BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, APRIL 27th, 1935

THROMBO-ANGIITIS OBLITERANS

WITH SPECIAL REFERENCE TO ITS PATHOLOGY AND THE RESULTS OF SYMPATHECTOMY

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This mysterious disease, formerly described under a bewildering variety of names, owes its present title to the work of Buerger, whose observations culminated in his important book, published in 1924.

The disease is a chronic, occlusive lesion, which affects, in the first instance, the medium-sized arteries, especially of the lower limb, and it is to Buerger that we owe the statement that thrombo-phlebitis is not only found in association with some cases, but may actually precede the development of clinical signs of arterial obstruction. The work of many observers since 1924 leaves no doubt that thrombo-angiitis obliterans is a definite clinical entity, belonging to the vasospastic group of vascular lesions.

The following study is based on personal observation of some 200 cases, and is largely concerned with the results obtained by sympathetic cord ganglionectomy. To this end we have taken as a basis of assessment those patients who were operated upon by us in the three years April, 1931, to April, 1934. The number is forty-eight, and in a recent review the present condition of each one has been ascertained.

Occurrence

Thrombo-angiitis obliterans is pre-eminently a disease of the male. Every writer insists on its rarity in women. A report of the Mayo Clinic mentions ten cases in women, Buerger gives only three, and we have seen but two undoubted cases. It is evident from the literature of the subject, which at this date includes several large and important series of cases, that less than 1 per cent. of the patients are women. Earlier writers stressed the frequency of the disease in the Jew, but more extended observations show that this suggested preponderance is merely fortuitous, and important lists of cases have been reported in Chinese and Siamese natives. Our own series contains no greater proportion of Jews than one would expect in the mixed population of Manchester.

Occupation appears to have no direct relation to the disease. We have thought that an undue proportion of our cases arose in men whose work as navvies, slaters, etc., exposed them to much wet and cold, but it is clear that this can be no more than a contributory or aggravating factor.

The disease is almost invariably first seen in the legs, and appears to begin in the medium-sized arteries, such as the dorsalis pedis and the posterior tibial. It is rarely seen in the arms. We have seen only two patients in which there was thrombosis of the arteries of the arm. It is significant that many of our patients complain of a Raynaud type of symptoms in the hands. This is present in one-third of the cases, and it has been seriously suggested that the symptoms of Raynaud's disease in the hands of a man will be followed by thrombo-angiitis obliterans in the legs. It would, however, need observations over many years to estimate the truth of this suggestion.

Instances of the disease have been described by other writers in the mesenteric, spermatic, and coronary arteries. In one of our cases (reported below), a man who died suddenly in a tram at the age of 26 showed at post-mortem examination the lesions of thrombo-angiitis obliterans, both macroscopical and microscopical, in his coronary arteries.

Age of Onset and Clinical Course

It is difficult to estimate the real age of onset because it is rarely that a patient comes under observation before the claudication has crippled him, and by this time the arterial disease is far advanced. It has taken perhaps months, more probably years, to reach the stage of claudication. The average age at which claudication was observed in our series is 45 years. It is likely that the disease commonly begins about 40 years, or even in the later years of the third decade.

After the age of 50 years occlusive lesions of the arteries are likely to be due to atherosclerosis rather than to thrombo-angiitis obliterans. It is important to stress this point, since the two lesions are quite different, and the atherosclerotic cases are not likely to benefit from sympathectomy.

Once established, the course of the disease is very variable. It is usually chronic, tending to progress by exacerbations with long periods of arrest. It is this factor which not only makes prognosis difficult, but renders it risky to lay too much stress on the value of any one particular line of treatment.

The variable course of the disease is well illustrated in our series. In one case a man aged 42 years was admitted on account of a thrombo-phlebitis of the right internal saphenous vein. He gave a history of claudication of less than seven months. On examination no pulse

was detected either at Poupart's ligament or in the iliac fossa on each side, and in seven days he was dead from a thrombosis ascending from the aortic bifurcation, which produced sudden obstruction of the inferior mesenteric artery. On the other hand, we have seen a man of 52 years whose claudication had lasted more than twenty years, and in spite of this he had never suffered any serious complication beyond the loss of small portions of two toes.

It is so common as to be almost the rule for the disease to begin first in one leg and later in the other, whereupon the second leg to be attacked shows the disease in a worse degree. It should, further, be realized that the disease is always bilateral. It is usual for a patient to complain of claudication in one calf and to state that the other leg gives no trouble in walking. The truth is that the worse leg pulls him up first, and the other leg, although probably on the verge of claudication, has no opportunity to display the symptom.

Symptoms

The first symptom to attract attention is the claudication. After walking some distance the patient is arrested by severe and crippling pain. The cramp-like pain is felt usually in the calf of the leg, sometimes in the foot, and may be described by some as a tense, constricting ring just below the knee. A rest of two or three minutes, often spent gazing into a shop window, relieves the pain, and the patient resumes his walk only to be pulled up again, often within a distance slightly shorter than before. His walking distance gets shorter and shorter as time goes on, and in one of our patients it was no longer than five yards. Should the patient hurry or be walking up-hill the claudication comes on earlier. The "walking distance" at which claudication begins is of little or no value in estimating the severity, depending as it does on such factors as speed of walking, inclination of ground, and the patient's own idea of distance. It is possible to obtain an exact measure of claudication by a simple machine constructed from an old-fashioned wooden back-splint with a foot-piece. The foot-piece is hinged, and the patient is asked to plantar-flex the foot to its full extent against a constant resistance and at a constant rhythm. In this way the symptom is reduced to a definite figure, comparable for all cases. For example, in a recent case pain began to be noticed and blanching to be seen at forty excursions, whilst at sixty-five all movement was arrested by severe pain, and the foot was seen to be of a cadaveric whiteness.

A few of the more observant patients have noticed before the onset of claudication that their feet felt at times intensely cold, and have observed that whilst in this condition the feet appeared very white. This blanching suggests that the initial lesion is vasospastic, and is akin to the first stage of a Raynaud attack. If these patients are examined immediately after walking, their feet will be found to be very white.

Blanching of this kind is, of course, not necessarily to be accepted as evidence of spasm. In these limbs, which already suffer from a diminished entry of arterial blood, the blanching may be due to a too rapid emptying of the veins as a result of muscular action. There are, however, certain observations, to be mentioned later in the section on examination of the pulses, which do suggest that a spastic condition of the arteries is not only present but may vary in intensity from time to time.

At a variable interval after the onset of claudication the patient notices that his foot becomes discoloured when hanging down. The colour is of a dull brick-red hue, beginning in the toes and spreading to the dorsum. If the foot in this condition is raised above the level of the heart the rubor disappears, and is replaced by a paper-white blanching. The rapidity with which these colour changes can be elicited is a measure of the arterial obstruction—the more rapidly they come and go the more advanced is the disease.

At length the patient begins to complain of pain whilst at rest, especially when warm in bed. He usually discovers that his pain is eased by exposure to cold air and by the dependent position. Many patients manage to secure some sleep by hanging the bare limb over the side of the bed.

Sooner or later the debilitated tissues invite the onset of "trophic" lesions. Not all cases develop these; the incidence is probably just under 50 per cent. of all patients. The most common is a chronic intractable onychia, usually of the great toe. In most cases the nail has been removed in an attempt at treatment, and the patient presents a deep callous ulcer of the nail-bed. This type is more common in the younger patients. In the more severe cases a black spot of gangrene appears, usually on a toe, sometimes on the heel, and is apt to take on a moist type, spreading rapidly to the foot and leg.

Thrombo-phlebitis, though an integral part of the disease, is by no means seen in all cases. In our experience it is relatively rare, and has been found in not more than 10 per cent. of the patients. Very exceptionally thrombo-phlebitis may appear as the first symptom of the disease, but in such cases we have not as yet seen a patient who did not show evidence of arterial obstruction. We have observed it usually only as a superficial lesion. In one patient only have there been symptoms of deep intermuscular phlebitis. It is found most often in the form of multiple patches in the smaller venous radicles of the leg, but at times considerable stretches of the saphenous veins, in both legs and thigh, may be affected.

Examination of the Pulses

In a case of average severity examination commonly shows an absence of palpable pulse in the dorsalis pedis, posterior tibial, popliteal, and superficial femoral arteries. It is usual to find a good pulse for a distance of some two inches below Poupart's ligament. This observation is of interest, because it is generally recognized by anatomists that it is in this district that the nerve supply of the arterial wall changes over from a perivascular to a peripheral origin.

The disease begins in the smaller peripheral arteries—for example, the tibials—and it is worthy of note that these smaller arteries contain relatively more muscular tissue than do the larger trunks, in the walls of which the amount of elastic tissue shows an increase. We have notes of some patients in whom the posterior tibial pulse is at one time distinct and at another time absent. Such a finding is of obvious importance in the aetiology of the disease. It is only in the older, more advanced cases that the thrombosis extends to the external, internal, and common iliac arteries. The silent arteries are often to be felt as solid rods, particularly in the case of the superficial femoral artery. Clinical evidence of extensive perivascular fibrosis can often be obtained on palpation of the popliteal fossa, the contents of which appear lost and merged in one diffuse fibrous mass.

The long-continued pain and lack of sleep produce their inevitable effects in these patients. They are usually very worn and tired.

The Cause

It may be said at once that the cause is unknown. Rabinowitz in 1923 described an organism which he averred was capable of causing the disease in rabbits. No one has so far submitted convincing evidence that the cause is a micro-organism.

We are probably on safe ground in regarding the disease as spasm followed by thrombosis. Some evidence of spasm is afforded by the intermittent attacks of coldness and blanching, often induced by exercise. Moreover, we have seen early cases in which pulsation in the posterior tibial artery is at one time distinct and at another time silent. That persistent arterial spasm will lead to thrombosis we know from the phenomena of ergotism and from our observations on those cases of cervical rib which show arterial complications. As an explanation of the spasm hyperadrenalinaemia has been suggested, and adrenalectomy has been tried as a line of treatment. Overaction of the constrictor mechanism by an irritative lesion of the sympathetic may supply the explanation, but we are as yet without a reasonable suggestion as to the cause of such overactivity.

We have examined many hundreds of sections of sympathetic cords and ganglia, obtained at operation on these patients, and on comparing these with presumably normal ones, obtained at similar ages, we find no evidence of any organic lesion in this part of the autonomic system.

Routine examination of the blood for sugar, urea, calcium, phosphorus, and for coagulability time has yielded no clue. Syphilis has nothing to do with the disease. The excessive use of tobacco, the cigarette being more usually incriminated, is often given as an explanation; both tobacco and paper have been suspected. Maddock and Coller found in tobacco smokers a drop in the cutaneous temperature of the digits which they state is not seen if the smoke be filtered. On the clinical evidence it is plain that, whilst tobacco may be a cause or a contributory factor, it cannot be the sole direct cause. The number of cases which have been seen in both men and women non-smokers prove that other causes must be at work. It is, for instance, said by experienced veterinary surgeons that thrombo-angiitis obliterans is found in horses.

Another clinical fact, difficult to interpret, is the predominance of the disease in men and in the lower extremities. In this respect it is of interest to note that where a large population has been exposed to poisoning by ergot, the toxic phenomena have been in men and in the lower limbs. The work of Pickering is interesting as showing that there are certain differences in the reactions of the arteries of the leg as compared with those of the arm. These observations may prove to have a bearing on the predilection of thrombo-angiitis obliterans for the lower limbs.

Naked-eye and Microscopical Anatomy

The investigation of the condition of the vessels in twenty-six amputations has provided us with the opportunity of studying the pathological changes which are characteristic of the disease, and has caused us to modify somewhat our earlier impressions published ten years ago.[1]

Dissection has confirmed the "patchy" nature of the disease, since it is common even in advanced cases to find several inches of normal vessel between two points showing partial or complete occlusion. As is to be expected, the situation of the arterial obstruction has a pronounced influence upon functional capacity. For anatomical reasons occlusion of the upper part of the popliteal artery is most unfavourable.[2] Dissection also demonstrates clearly that the disease affects primarily the muscular arteries, and that at a later stage the veins may show very little change. Our investigations have proved that the veins are implicated much less than is supposed, and there is considerable evidence to suggest that the histological change in the veins is different from that in the arteries. In the latter the primary change is undoubtedly to be found in the inner coat, where proliferation of the intima can invariably be demonstrated at the initial site of the disease. Later, thrombosis occurs in the neighbourhood of the intimal irregularities. The size of the clot varies. At first it is often very small and localized, but later increases by additions, and it is often possible under the microscope to recognize three zones—the thickened intima, the organizations of the primary thrombosis, internal to which is to be seen the more recent clot. These changes lead to a narrowing of the lumen, and ultimately to occlusion. When the thrombosis completely fills the lumen the clot often extends in a central direction some distance beyond the site of the original intimal proliferation, and transverse sections of the vessel at this level will fail to demonstrate the primary intimal change. It is suggested that this is why some observers have not recognized the significance of the thickening of the intima. Succeeding proliferation of the intima, and becoming more pronounced as the organization of the clot proceeds, is to be found fibrosis of the media. The increase of fibrous tissue in the adventitia is also associated with the organization of the thrombus. Unlike Buerger[3] and some of the other writers, we find nothing characteristic in the process of organization. We have, but only occasionally, seen the collections of lymphocytes to which Buerger has directed such marked attention. In our view the organizing process shows no special features. In veins proliferation of the intima is usually absent, and the primary change there is obstruction by clot. Later this becomes slowly organized, and again the process is not in any way different from that under other circumstances. Our inquiries have caused us to believe that the venous thrombosis is, as a rule, if not invariably, secondary to the arterial changes. The cause of the intimal proliferation in the arteries remains obscure, but we believe that it may be related to the attacks of intense spasm which we have noted clinically.

Treatment

The essentially chronic nature of the disease, with its long periods of intermission, makes it very difficult to estimate the value of treatment, and no doubt explains the good results which writers have, from time to time, claimed for one particular method. Our own experience is that all forms of physiotherapeusis are, at the best, merely temporary palliatives, and unless handled with care may be actually dangerous. No drug by mouth appears to have any effect on the disease. The injection of substances—for example, muscle extract, acetylcholine, typhoid vaccine, and similar vaso-dilator agents—has been extensively tried. The results are temporary, and the patient soon tires of the discomforts of febrile reaction.

Operative treatment of various kinds has been explored by many surgeons. Adrenalectomy, high ligature of the femoral vein, and perivascular sympathectomy have failed to maintain the often enthusiastic claims with which they were introduced. If the disease is, at its root, spastic in nature, and if such spasm is the result of impulses via the vaso-constrictor fibres of the sympathetic, the most obvious and rational operation is cord ganglionectomy.

We began our series in April, 1931, and up to April, 1934, we had performed the operation of lumbar cord ganglionectomy (excision of the second, third, and fourth lumbar ganglia with the intervening chain) in forty-eight cases of thrombo-angiitis obliterans. In forty-two of these the excision was bilateral, and in six a unilateral operation was done, the patients having already suffered amputation of one leg. Convalescence in all cases was straightforward, and there was no death in the series.

The Results

The present condition of these cases has been recently reviewed. Since operation six of the patients have died. The causes of death are: haematemesis from a duodenal ulcer (verified post mortem) ; alcoholic delirium (verified post mortem) ; cardiac muscle failure (no post-mortem) ; and the remaining three from coronary disease (one verified post mortem). In the remaining forty-two we have classified the results as:

Good.—Free from rest pain, able to walk well, and in most cases have returned to work.

Fair.—Improvement as regards rest pain and general condition, but little or none as regards walking and capacity for work.

Unsuccessful.—No improvement in several cases ending in amputation.

The numbers in each case are: good, twenty-five ; fair, seven ; and unsuccessful, ten.

Many points of interest in the post-operative condition of these patients have already been discussed by us in a former article, and more extended experience has confirmed the opinions there expressed. The object of sympathectomy being to abolish spasm and to dilate such collaterals as are still capable of enlargement, it is evident that the younger patients and the less advanced cases will give the better results. It is in this class of case that the majority of our good results lie. Some writers have taken the line that early cases should not be subjected to sympathectomy because of the gravity of the operation. The operation is, in fact, perfectly straightforward, not particularly difficult, and very safe ; it is at least as safe as a simple appendicectomy. Moreover, it is just in these earlier cases, where spasm is pronounced and thrombosis limited, that the operation should be done.

Cases with onychia have healed readily and permanently, but the outlook when gangrene is present is not good. In these advanced cases it is doubtful how far sympathectomy is worth while ; the operation will, however, ease pain, and may permit a lower level of amputation than might otherwise have been possible.

The present inquiry is concerned more immediately with the permanency of the result and the effect of sympathectomy on the progress of the disease. On many of these cases it is perhaps permissible to express an opinion, since they are of more than three years' standing. The operation does appear to have a definite action in arresting further progress of the disease. In only two cases is there any evidence of deterioration, and in one of these a partial amputation of a toe has been necessary. It is interesting to note that attacks of phlebitis may still occur after operation ; of this we have had three instances. The effect on the claudication is apt to be disappointing. In a few of the slighter cases this disability has been entirely abolished, but the average result is that although the walking distance may be considerably lengthened the claudication is still present.

Conclusions

Our conclusions are that in the present state of knowledge of thrombo-angiitis obliterans, treatment by cord ganglionectomy is not only to be recommended but is the only procedure which offers any hope of permanent relief. It will give its best results in the younger men, and in those cases in which the spasmodic element is clinically well defined, as evidenced by reaction to exercise and by the customary preliminary vaso-dilator tests. The positional colour changes have seemed to us of great value in determining the extent of the disease ; the more they are marked the less satisfactory will be the operative result.

There are two cases which we wish to place on record as presenting features of special interest. In the one case, thrombo-angiitis obliterans has given, so far, a good result after cervico-dorsal ganglionectomy, whilst the second illustrates death by coronary thrombosis in a man of 26 years, and shows that changes, indistinguishable from those of thrombo-angiitis obliterans, may be present in the heart at this early age.

SUMMARY OF CASES

1. Male, aged 39 years, clerk. First symptoms were in the legs thirteen years ago. Both legs were eventually amputated for gangrene. In February, 1934, he was seen with his right hand white, "dead," and very painful. No pulse was felt from the wrist up to the proximal part of the brachial artery. The right cervico-dorsal ganglion was at once removed. The arm recovered and, although it shows no pulse, it has been warm, useful, and free from pain since the operation. Towards the end of June, 1934, he complained of similar symptoms in the left hand. All pulses were present, but very weak. During the ensuing three weeks the thrombosis was seen to ascend from the wrist to the anterior axillary fold. The left cervico-dorsal ganglion was removed. The hand became warm, useful, painless, and on several occasions a faint radial pulse has been detected. The symptoms, which appeared with great rapidity and threatened the loss of both arms, have, up to the present, been completely arrested.

2. Male, aged 26 years, engineer. He began with claudication as a student at the age of 19, and became steadily worse. Onychia developed in the first and second toes of the left foot before admission. Callous ulcers were present where the nails had been avulsed. He had spent the nine months bedfast and in much pain. No pulse was to be felt anywhere in the legs excepting in the common femoral artery of each side. After a bilateral sympathectomy in August, 1932, he recovered very quickly and returned to his work, which involved much travelling both at home and abroad. During this time he reported frequently, and seemed very well. Exactly twelve months after his operation, whilst running for a tram, he collapsed and died. Post-mortem examination showed a pericardial sac containing some blood-stained fluid ; the heart muscle was heavily infiltrated with blood, and the coronary arteries much reduced in calibre by thrombo-angiitis obliterans. This case is of much interest as showing that the disease may, on occasion, be more widespread than one is apt to imagine. A similar case is reported by Perla.

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[2] Stopford, J. S. B.: "A Cause for the Frequent Occurrence of Gangrene after Ligature of the Popliteal Artery," *Brit. Journ. Surg.*, 1924, xii, No. 45.
[3] Buerger, L.: *The Circulatory Disturbances of the Extremities*, Philadelphia, 1924.

Discussing the importance of the diencephalic factor in the pathogenesis of epileptic crises, A. Salmon (*Presse Méd.*, March 13th, 1935, p. 405) states that the epileptogenous properties of the diencephalic nuclei are demonstrated by the fact that experimental and pathological lesions of the said nuclei are manifested by convulsive phenomena. This conception, which accords perfectly with the sympathetic and hormonal properties of the nuclei of the tuber explains the pathogenesis of the numerous cases of diencephalic epilepsy reported in recent years. The theory of an epileptogenous centre in the infundibular region does not imply that epilepsy is always connected with diencephalic alterations: cases of cortical origin are much more frequent than those of subcortical. Many clinical facts support the theory that a diencephalic factor exists also in the pathogenesis of epileptic attacks of cortical origin. The latter show a very close relation with the principal diencephalic functions (sleep, heat production, glyco-regulation, diuresis), which are ameliorated and temporarily disappear by the barbiturates having an elective hypnotic action on the nuclei. These facts justify the hypothesis that epileptic crises of cortical origin depend on the very sharp reaction of the diencephalic nuclei, and explain their amelioration by medicaments which diminish the activity of the latter. This accords with the opinion that epilepsy of cortical origin is due to suppression of the inhibitory action of the cortex on the subcortical centres. Cortical changes, through qualitative and quantitative modifications of the cerebral fluid, usually react on the functions of the subthalamic nuclei.

MODERN VIEWS ON THE CANCER PROBLEM *

BY

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One might define the cancer problem as the attempt to discover what causes cancer and how it can be cured, but this is much too vague a definition for the present day, and I would suggest that the questions we are attempting to answer are: what are the processes involved when a tumour arises in apparently normal tissue cells, what initiates this change, and how can it be prevented or arrested?

When we desire to solve a problem there are several ways in which we may proceed, but that which most appeals to me, and I believe to most of us, is first to assemble all the facts that can be relied upon and then to attempt to draw logical conclusions from these facts. The conclusions so reached can then be tested against the facts to see if they all fit properly into place. If they do, we can seek further confirmation by noting what other facts we can deduce from the conclusions, and if we are then able to find such further facts we can fairly safely infer that we are on the right track, and have gone a long way towards finding the correct solution of our problem. This is the method of solving problems so dear to the authors of detective stories, and it has much sound reasoning behind it. Now I propose to deal with the problems of the cause of tumours, and more particularly of cancer, much in this manner—that is to say, I propose to marshal those facts which are undisputed with regard to the problem of tumours, and then to draw conclusions and show how they fit, or do not fit, the facts.

What may be called "the cancer problem" will, I believe, always rank as one of the most remarkable that human intelligence has ever been asked to solve. For at least thirty years it has been the subject of very intensive study by a large number of eminent persons, and considerable sums of public money have been expended in attempts to solve it. Since the inception of the British Empire Cancer Campaign some twelve years ago this effort has been very materially accelerated. More scientists have been attracted to the search, both in England and all over the world, and I do not think I am exaggerating when I say that no scientific problem has previously attracted so much intensive investigation as this one. Many, very many, of the investigations have had negative results, but facts may be either positive or negative, and negative facts are nearly, if not quite, as important as positive ones. The facts that have now been established, both negative and positive, I shall attempt to enumerate.

Established Facts Concerning Tumours

1. Tumours, both innocent and malignant, are found in all mammals, in birds, and in fish, but so far have not been found in the invertebrates.

2. The incidence of tumours—that is, the number of individuals suffering from tumours per 1,000 living, corrected for age—seems to be about the same all over the world. The actual incidence in the animal kingdom is not ascertainable, but there does not appear any sound reason to suppose that with the proper corrections it would differ very much from that of human beings. Tumours certainly occur in wild animals and birds.

3. Though the incidence of tumours is approximately the same, the site incidence—that is, the particular part or organ affected—varies very widely. For instance, while the cancer incidence per 1,000 in England and Japan is almost identical, there is a very great difference in the site incidence. Also certain animals seem much more liable to have tumours in particular situations than others: birds in the genito-urinary tract; mice in the mamma; cattle and horses in the intestines.

4. A tumour cell is specific to its original form, wherever it may be. Thus a rectal tumour which recurs in the liver, brain, or in the bones still retains its character as a rectal tumour, and a tumour which starts in the ducts of the mammary gland still retains this character if it recurs in the spine or in the lung.

5. A tumour results from the overgrowth of one cell (possibly of a small group of cells), and all those composing the tumour are derived from this one cell. The surrounding cells are not converted into tumour cells, or in any sense absorbed into the tumour.

6. The tumour cells are normal cells dividing at an excessive rate. When a normal tissue cell divides, one cell remains as a replacement cell, and the other proceeds to differentiate, but all tumour cells are active dividing ones and very little differentiation takes place. In every tissue, whether it be skin, epithelium, gland, or connective tissue, the renewal of damaged or worn-out cells is confined to a single layer of cells, which we may call the replacement cells. These are the cells nearest the connective tissue or basement membrane, and are usually called "basal cells." These alone divide, and the remaining cells in the tissue are differentiated cells which have lost their ability to divide. A better term for them would be basal cells, but this might cause confusion, since we have such expressions as basal-celled carcinoma, as distinct from epithelioma; although as a matter of fact all tumours are primarily due to basal cells—that is, reproducing somatic cells. A true tumour cannot occur in a highly differentiated cell, such as one of the cells of the hair or nails, and is very rare in the brain.

7. The differences that have been demonstrated between tumour cells and normal cells, such as increased oxygen consumption and increased power of breaking down sugar, may be construed as the result of their greater activity as compared with the normal cells.

8. Tumour cells are species-specific. Thus human tumour cells will not grow in any other animal; mouse tumour cells will not grow in rats; avian tumour cells will not grow in rabbits, and so on. The specific character of tumour cells is very exact. It is extremely difficult to transfer human cancer from one individual human to another human; it has often been tried, but only in one or two instances has it succeeded.

9. Tumours are a disease of growth. Normal growth goes on in the human body through life in order to make up for wear and to replace damaged tissues. Tumours are due to local excessive growth—that is, growth in excess of the general requirements of the body to replace wear and repair loss.

10. In certain families, both of humans and of animals, it has been observed that tumours very rarely, or never, occur, while in others the incidence of tumours is very high. The tendency to tumour production is an hereditary character which by artificial breeding can be either increased or decreased. The proof of this is that tumours in human beings are much commoner in certain families than in others. In certain interbred mice cancer of the mammary gland occurs in 90 per cent. of the females, while in other similarly interbred mice—those which have been bred brother to sister for a number of generations—cancer does not occur at all. The best

* A paper read to the Tunbridge Wells Division of the British Medical Association, March 13th, 1935.

proof of this fact is that in homologous twins or uniovular twins, when a tumour occurs in one twin it is always found to be present also in the other in the same organ, at the same time, and of the same character. McFarland and Meade have collected twenty cases of uniovulvar twins having the same kind of tumour in the same situation at the same age. Moreover, they were quite unable to find a single instance of a homologous twin with a tumour whose fellow twin had not the same tumour, in the same place, at the same time.

11. Tumour formation may occur at any age, but the vast majority of tumours occur in the later stages of life—that is, when the individual is becoming old.

12. In the last few years a great deal of research has been devoted to a study of carcinogenic agents. The most potent of all is a chemical agent produced synthetically from simple chemical substances, called 1:2:5:6-dibenzanthracene. This substance, if painted on to the skin of a mouse, will almost inevitably produce an epithelioma. If injected into the peritoneal cavity of rats it will cause extensive sarcomatous formations. It is not an irritant in any sense, but no other known substance will give rise to cancer with such certainty. Other cancer-producing agents are tar, *x* rays, and radium. It has been claimed that these agents are irritants, and produce cancer owing to the chronic irritation that they arouse. But with the exception of tar they are not irritants. Formalin, which is a potent irritant to human tissues, cannot be made to cause tumours, and mustard gas, which is a most violent irritant, not only does not cause tumour formation but inhibits it. It has been proved that if tar or 1:2:5:6-dibenzanthracene is applied to mice alternately with mustard gas, such mice will not develop cancer, while the control mice, which have been painted with tar or 1:2:5:6-dibenzanthracene and not with mustard gas, do. It must be noted that all the proved carcinogenic agents are substances which are not apparently present in a natural or normal environment.

Phenomenon of Excessive Reproduction of a Cell

Now let us consider what conclusions we may logically deduce from these facts. A tumour, whether simple or malignant, is the result of a tissue replacement cell, a somatic cell, reproducing itself at an excessive rate as compared with the normal rate for the tissue of which it forms part, and as an inevitable consequence in course of time a tumour develops. Thus if one of the basal cells of the skin suddenly begins to divide once every two days instead of once in fourteen days, it is obvious that in time a swelling or tumour will form as the result of the excessive reproductive activity of this one cell: and as each descendant of that cell, having inherited this property of excessive rate of division, will continue the process the tumour will get larger and larger.

This, in simple terms, is the way in which a tumour forms; but how are we to explain why it occurs? I think few people will disagree with this explanation of the way in which a tumour develops, but there is still great disagreement as to the cause of this phenomenon. Many theories have been suggested to explain why a normal tissue cell suddenly begins to reproduce itself at an excessive rate. The two chief theories at the present time are: (1) That the change is caused by an infective agent—a living parasite—that has found a means of access to the cell nucleus and caused the change in its behaviour: the infective theory. (2) That the change is due to a mutation of the genes in the nucleus of a somatic cell resulting in an excessive rate of reproduction: the genetic theory. It may be noted that the first theory tries to explain why a tumour starts, while the second attempts to explain the method of tumour formation. They are not, therefore, necessarily antagonistic.

The Infective Theory

This theory assumes that an infective agent, a parasite of some kind, obtains entrance to the somatic cells and so acts upon them that they proliferate at an excessive rate and cause a tumour. This theory is very pleasing because, if true, it would seem possible to find a poison which would kill the parasite without damaging the patient, or a vaccine which would protect him from infection.

The following are the objections to such a theory. If tumours are due to infection by a parasite then the incidence of tumours among civilized communities should be decreasing, since owing to modern methods of hygiene most of the known infective diseases—such as typhoid, cholera, and small-pox—due to bacteria and viruses are becoming less frequent; the incidence of tumours, however, is increasing. Again, our knowledge of diseases due to infective agents (parasites) is considerable, and there is no single example of a disease due to such causes showing the extraordinary specific characters that are seen in tumours. While there are some infective diseases which are peculiar to one species of animal, such as small-pox and varicella in humans, and distemper in dogs, and foot-and-mouth disease in cattle, they are not so specific as cancer. Other animals besides dogs can have distemper, and foot-and-mouth disease attacks horses, deer, and even man occasionally. The extremely specific character of tumours has no counterpart among the known infective diseases of animals or man.

The most convincing argument against tumours being due to an infective agent or parasite is the fact that is afforded by the incidence of tumours in homologous twins. If tumours are due to an accidental infection by an infective agent, we can hardly believe that both the twins became infected by the same agent at the same time, and that it infected the same organ; also there is no instance of one twin being infected and not the other. Coincidence might account for this occurrence in two, or possibly three, instances, but could not account for twenty.

Genetic Theory of Tumours

This theory explains the causation of tumours as the result of a genetic change in one or more of the somatic cells. We know that when the nucleus of a living cell divides in order to form two cells, the process called mitosis, a change or mutation occasionally occurs which results in an alteration of the arrangement of the genes upon the chromosomes, or even an alteration in the genes themselves. It is by these chance mutations in germ cells that new varieties and species of organism have been produced in the course of evolution. Such mutations may, however, occur in the nuclei of somatic cells as well as germ cells, and there is evidence that they do. Now when a gene mutation occurs in a cell nucleus, every succeeding division of that cell will result in the change being passed on, so that the mutation or change is permanent in the descendant of that cell. A mutation in a somatic cell can, however, produce no appreciable result, since it will only be present in one single cell, as somatic cells do not increase in numbers. Should, however, the change or mutation be for an increased rate of mitosis then it is obvious that in time there will be a colony of mutated cells produced by this single cell. The cells in the mutated colony will be normal cells, except that their rate of reproduction will be faster than normal. *This is exactly what a simple adenoma or papilloma is found to be.*

This theory explains why a tumour remains specific to the tissue in which it started, even though it occurs as a metastasis in the bones or the brain ; also why tumours are specific to one species of animal. After all, we should hardly expect that cells from one kind of animal would grow in another of a different kind. It explains why the same tumour is sometimes found in both homologous twins. Since the genetic susceptibility of the twins is identical, if there is a hereditary weakness of certain somatic cells which renders them liable to mutation in one twin, it will also be present in the other to exactly the same extent.

It attempts to explain why certain carcinogenic agents cause tumours, since we know from recent experimental investigation that *x* rays and radium are capable of causing gene mutation of germ cells and somatic cells. The curious fact that a mouse tumour can be transplanted from one mouse into another again and again is explained by his theory. Some of the mouse tumours have been transplanted sixty times—that is, they have passed through sixty generations of mice—and yet have retained their original character. It is obvious that if the tumour cells are the progeny of the original mutated cell they will retain the characters imposed upon them by that parent cell.

Innocent and Malignant Tumours and the Genetic Theory

There are no known facts about tumours which are not explainable by this theory, but if it is correct, how are we to explain the difference between an innocent tumour, which does not metastasize, and a malignant one that does? We have still to find an explanation, but a paper recently published by J. C. Mottram on the rate of growth of tar warts in mice seems possibly to afford a satisfactory solution. He postulates that the growth rate of the tumour cells decides whether the tumour will be benign or malignant. If the growth rate is slow the connective tissue is able to develop so as to maintain the normal relation between itself and the tumour cells, but if the growth rate is fast the connective tissue is sometimes unable to maintain this relation and the tumour cells invade the connective tissues, and a malignant tumour results. It seems quite possible that this simple explanation may be the correct one. There is still a great deal of work and much hard thinking to be done before the question of the aetiology of tumours can be finally settled, but it is obvious that considerable progress is now being made.

Modern Developments in Treatment

Not so very long ago cases of malignant tumours were looked upon as hopeless, even by our profession ; but those days have passed, and surgeons are now able to cure a proportion of cases. It is true that we can do very little for the advanced cases that still form far too high a proportion of the whole, but in cases where the diagnosis is made reasonably early good results are obtained. To-day a number of hospitals have what we call "follow-up systems" for cancer cases, and the figures show that if we leave out the very advanced ones the percentage of cures for cancer of the uterus and rectum is over 50 on a five-year basis, and for cancer of the breast the figure is still better. Rodent ulcer is curable if taken in time, and the same is true of epithelioma. A fairly high percentage of cures is also being secured for cancer of the tongue and pharynx. These results are being obtained partly by operation, partly by radium, and partly by a combination of both.

It may be said that our present methods of treatment in some situations are effective, if only the cases can be diagnosed at a sufficiently early stage.

POISONOUS SUBSTANCES TO DESTROY TUMOUR CELLS

A number of such substances have been experimented with, but only a few found suitable for use in human beings. Of these certain compounds of lead and selenium have been used successfully, and in a few cases destruction of the tumour without producing fatal results to the individual has been achieved. Unfortunately such substances have proved to be very poisonous, and their use is attended with considerable danger. Cobra venom has also been tried, but with no definite results.

At the present moment several investigations are being carried out with new forms of *x*-ray plant. Some of the plants with very high voltages give off rays which closely resemble the rays of radium. Another plant, which has been produced in Germany and works with low voltages, seems to promise better results than the high-voltage ones ; it can be applied locally to the tumour in the operating theatre, if necessary, and may prove a distinct advance in the treatment of certain cases.

It has been shown that it is possible to obtain a homologous serum from rats which kills tumour cells in culture *in vitro* but has no harmful effects upon normal cells. In other words, by injecting tumour emulsion into resistant animals the serum from these animals causes the destruction of tumour cells. By the use of such sera it has proved possible to cause regression of spontaneous tumours in both mice and rats. Considerable further work is required before similar sera can be used for the treatment of human tumours, but these very important research investigations are being pushed on, by grants from the British Empire Cancer Campaign, as energetically as possible. There seems at least a hope that the active substance in such sera will be successfully separated and made available for the treatment of human beings, but the work is extremely difficult, and it may take some time before success is achieved. A number of other sera and extracts of placental tissue have been proposed for the treatment of cancer, but there is no reason that I know of to believe that they have any influence at all upon tumours.

The cancer problem is a very difficult subject to discuss in a short lecture and at the same time to make oneself reasonably intelligible. The subject of human genetics is a very new branch of biology, and at present most imperfectly understood, but it has thrown an entirely new light already upon the whole subject of tumours, and in my own opinion makes it possible at last to understand their aetiology. Investigation into both the origin of tumours and their treatment in human beings is being intensively pursued all over the world to-day, and a complete solution of the problem should not be much longer delayed.

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The Royal Italian University for Foreigners, which has its seat at Perugia, was founded some ten years ago to disseminate knowledge of past and present Italy, and arranges courses of instruction from July to December. In 1936 the University will open in April. Beginning next July, there will be lectures on Dante (*Il Paradiso*); the eighteenth century in Italian literature, art, history, politics, and science ; and modern and contemporary Italy. The programme of the courses in advanced culture, which will be held in October, November, and December, will be published in August. Information concerning enrolment, fees, diplomas, and reductions in the cost of travel and accommodation can be obtained from the Rector, Regia Università Italiana per Stranieri, Perugia, Italy.

TREATMENT OF TUBERCULOUS PLEURAL EFFUSIONS AND EMPYEMATA*

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The adequate and justifiable treatment of tuberculous pleural effusions and empyemata can be undertaken only with a proper understanding of their pathogenesis, and of the changes in normal structure postulated by their presence and possible as their end-results.

Pathogenesis

Inflammation of the pleura, apart from the so-called idiopathic type, may occur in any stage of phthisis, and may be acute or chronic, with exudation either on to its surface only or into its cavity. In acute cases the membrane becomes soft and reddened, and a grey lymph exudes; should the process stop at this point fibrinous adhesion through the action of pleural cells takes place between the two surfaces, and a repetition of this process produces plastic pleurisy. Such a condition is a frequent post-mortem finding in cases with as well as without known clinical phthisis during life, and is commonest and most dense at the apices, just as in recent cases the most usual point for inflammatory changes on the membrane is posterior to the apices. Should the inflammation continue beyond such exudation of lymph a second stage supervenes, with outpouring of serum from the capillaries, leading to pleurisy with effusion, the fluid being yellow with a greenish tint, more or less pronounced, and with flakes or even coagulated masses of fibrin.

That a pleural effusion may be, therefore, the result of an infection of the lung periphery by contiguity and extension will be readily admitted, but battles are still raging in the medical publications of every country over so-called "idiopathic" pleurisy, some writers wishing to find every possible excuse for avoiding sanatorium treatment, others boldly advocating gas replacements and even surgical collapse in every case. Norris and Landis state that 80 per cent. are tuberculous; Fishberg says that in many cases it would appear to be tuberculous but many are rheumatic. Bowditch, in a study of ninety cases, found that thirty-two died of phthisis. Allard and Koster state that of 2,123 cases of phthisis they found a history of previous pleurisy in 30 per cent.; of all cases I admitted to Midhurst Sanatorium with definite pulmonary disease between 1924 and 1933, 26.6 per cent. had a history of pleurisy three to four years before admission.

Diagnostic Criteria

Such investigations show that the true percentage of tuberculous origin must be very high, for apart from the fact that many cases are never investigated or followed up, we recognize the curative value of a pleurisy on an underlying lung lesion. It can be taken as a safe rule that a pale yellow fluid which has a specific gravity over 1018, is alkaline, clots on standing, and has an excess of small lymphocytes is tuberculous. It is true that tubercle bacilli will seldom be found by the methods now in common use, in the early stages of the effusion, and that even massive injection into a guinea-pig may give negative results, but it has been shown that positive results can be got in far greater numbers than formerly by the culture method of Dr. Jensen of the Serum Institute of Copenhagen, which he developed on the techniques of Griffiths and Lowenstein, and which has been used and further improved in this country by the work of Dr. McCartney and Dr. Holmes.

*Read to a meeting of the Tuberculosis Association at Oxford, April 12th, 1935.

An interesting piece of research has been done by Tobiesen; he examined the stomach washings of 162 cases where no signs of an underlying lung lesion could be found at the time of the effusion, and compared his findings later with the *x*-ray signs after absorption. Of the 162, 45 per cent. had been positive; of forty-seven afterwards shown to have an *x*-ray lesion 47 per cent. had been positive; while of 115 without *x*-ray signs 39 per cent. had been positive. It seems only reasonable to conclude that idiopathic pleurisy means previously or presently active tuberculosis of the lung even though this is not discovered clinically, and that all cases should be treated as such at least until they are proved to be otherwise.

This belief need not lead us, however, to employ the drastic immediate treatment advocated by J. L. Lewis in a recent paper. He advises in all cases gas replacements, with enough air to separate the pleural surfaces but not materially collapse the lung, and frequent replacements until the fluid disappears. E. P. Smart claims that mortality has been reduced since he practised such treatment, but surely experience has proved such interference to be wholly unnecessary.

Fluid is Nature's splint, to be removed only where the patient is in cardiac or respiratory distress; where it is not absorbing in reasonable time, when often even a slight amount withdrawn will start the process; where there is active lung disease as shown by long-continued temperature, in which event air replacement for therapeutic pneumothorax is indicated; and where it is of such long standing that temporary replacement is necessary in order to watch the lung for active disease during re-expansion.

Value of Sanatorium Treatment

If the object of such treatment is to keep the patient until he has had sufficient rest absolutely quiet, and during that time to instil the principles of sanatorium regime, it might have some excuse, but even this is not sufficient reason for exposing him to the risk of superimposed infection. Rest till absorption, followed by sanatorium treatment, is undoubtedly the best treatment. A pleuro-pulmonary fibrosis is the excellent result in many with underlying lung lesions, and I believe such a secondary type of pleurisy can be diagnosed from the temperature reaction, for the fall is not by lysis, but by a series of peaks of temperature, each succeeding peak being lower than its predecessor. The value of sanatorium treatment has been proved by many observers. Helms followed the after-history of 150 cases: in two years the combined morbidity and mortality was only 7 per cent.; in eighty-four, followed for more than five years, it was 5 per cent. J. W. Gaarde reports that of sixty-eight who had at least four months' rest forty-three recovered completely, while of seventeen with at most two months' rest eleven had died. Between 1926 and 1933 I admitted sixty-one cases at Midhurst; of these to date only two have developed any further signs or symptoms of tuberculosis: both have died of tuberculous meningitis, without intermediate lung involvement, so that it is probable that both had actual pleural involvement from the time of onset or developed it later as a result of the effusion.

Such tuberculous infiltration of the membrane may occur in two ways: (*a*) by the blood or lymph stream—a primary infection; (*b*) by absorption of a pleural exudate containing tubercle bacilli from an infected lung—a secondary infection.

Bacilli transmitted through the blood or lymph stream may lodge in any part of the membrane, internal or external to its elastic layer, to form true tubercles, which may go through all the known stages of evolution up to calcification. The resulting exudate seldom becomes pro-

fuse, but a steadily extending plastic pleurisy may develop or a true tuberculous empyema supervene. In the former result I would place such cases as never show a demonstrable lung lesion by sputum test or *x*-ray findings, but who either go slowly downhill by progressive pleuro-pulmonary fibrosis or suddenly develop meningitis after apparently reaching a dormant condition following the pleurisy.

Secondary Tuberculous Empyema

Tuberculous infection of the pleura has long been recognized as a cause of chronicity in empyema, and while it has never been rare as a primary infection, as a secondary manifestation of phthisis it is much more common, especially since the introduction of artificial pneumothorax. In such an event there has been absorption of an exudate containing tubercle. Here the pathology is quite different: a tuberculous pleuritis develops, producing granulation tissue without true tubercles, limited to the pleura internal to the elastic layer. Profuse, clear, or blood-stained exudate is the usual result, and while withdrawal may lead to adhesion of the surfaces and a consequent dormant condition, it is very liable to recur, and to change in character until it becomes a true tuberculous empyema. Such a secondary empyema has a profound effect on the pleura, especially the parietal layer, which now develops true tubercles internal to the elastic layer and non-tuberculous fibrous tissue external to this layer up to one or more centimetres thick, or even calcareous plaques.

The possible danger of fluid complicating artificial pneumothorax is therefore evident. Its effect on the underlying lung in long-standing cases must also be taken into account, for by the formation of adhesions it may cause obliteration of the pleural space and consequent reactivity of the lesion. J. B. Nablant therefore advises that all effusions should be frequently aspirated, a rule of thumb which ignores the individual, who must be considered on (1) the character of his effusion ; (2) the activity in the underlying lung ; (3) his possible complications—for example, disease in the other lung.

The majority of effusions which occur where pneumothorax was induced prior to the stage of cavitation are tubercle-free. The thoracoscope has demonstrated that adhesions are present in far greater numbers than can be shown by the most careful *x*-ray control ; and, while many of these strands give way under continued treatment, even with consistently low intrapleural pressures, without any but good effect, their rupture is the usual cause of fluid, as their injured surfaces are exposed to contaminated atmospheric air. Actual tuberculous infiltration of these strand-like adhesions is rare.

Many observers have noted the distinct benefit of fluid in cases previously not doing well ; again, many have seen how, just as in idiopathic pleurisy, a small amount withdrawn for examination has hastened absorption. The danger of resulting adhesions in sufficient amount to interfere with the efficiency of the pneumothorax is often grossly exaggerated, and even when they do form they are generally basal and so over a part of the lung which is healthy ; moreover, the re-expansion following slow obliteration may give an excellent result, while if it is desirable to continue the refills and the conditions are otherwise suitable, phrenic evulsion can relax these basal adhesions. It may be as wrong to continue replacements in a sero-purulent effusion as it would be to do a phrenic evulsion in a case with apical cavitation, and therefore very likely to absorb the effusion and attain arrest of the diseased area by an upper thoracoplasty.

Of my own pneumothorax results I have compared forty with fluid and forty without fluid ; they are all end-results in so far as all had ceased refills and had been followed for from two to nine years from the date of induction. Of the forty without fluid thirty-three were alive as against thirty-one with fluid ; the corresponding numbers with negative or no sputum were twenty-six and twenty-five ; the numbers fit for work, twenty-seven and twenty-four ; and the numbers dead, seven and nine—a remarkably parallel result. In thirty-five of forty cases fluid had no apparent immediate ill effect ; twenty of these carried on refills as usual after absorption with no evidence of interference by adhesions, and while six showed fresh disease later, in five it was in the opposite lung and in one in the larynx. This may be compared with the result in the fifteen who obliterated, of whom three showed rapid spread in the other lung—but two were already bilateral at the time of induction and the third had tuberculous laryngitis. Again, of the twenty who continued refills only two had replacements, while of the fifteen who obliterated six had this treatment.

I am not, therefore, convinced of the great dangers of an effusion which is tubercle-free and does not become sero-purulent ; of the benefits of continued gas replacements, or of the invariable disadvantages of obliterative pneumothorax ; and I would apply the same rules on observation and treatment to cases of spontaneous hydro-pneumothorax.

Primary Tuberculous Empyema

The same guiding principles outlined above ought to apply to the treatment of primary tuberculous empyema ; there is no general rule. The patient's reaction may be so profound that rib resection is a necessity, and the resulting sinus only a secondary consideration. If such operation is imperative too low an incision is a mistake, as there is the possibility of a tract forming between the diaphragm and the chest wall, very difficult to drain, and therefore leaving the patient open to the danger of a residual active focus. Where it is intended to go on to thoracoplasty later it may be better to do a phrenic last, as contraction of the diaphragm may aid approximation of the cut ends of the seventh to tenth ribs as against the tendency of the rising abdominal viscera to push them apart.

In less severe conditions Lambert of New York claims good results from irrigation with 1 per cent. watery solution of gentian or crystalline violet. Simple aspiration may occasionally be quite successful, as it may lead to adhesion of the pleural surfaces, but on the whole the literature on end-results seems to support aspiration and air replacement—that is, the production of a pyo-pneumothorax, and then extrapleural thoracoplasty, as adhesion takes place provided accumulation is not allowed, and the operation wounds heal as they are in normal healthy tissue. Intermediately in cases with considerable pleural thickening it may be advisable to irrigate with Dakin's solution to attempt decortication, although it is usually impossible to forecast which lung will re-expand, as some show more tendency than others to a gross pleuro-pulmonary fibrosis. Operations of the Schede and Estlander type, which aim at obliteration by removing the pleura and intercostal muscles first, are usually unsuccessful. Further experience in thoracoplasty seems to offer the best chance of improving the prognosis in this grave condition, for whereas Archibald in an earlier series claims only five recoveries in nineteen cases, Hedblom, in a more recent series, can claim seventeen of twenty-three cases.

Secondary Pyogenic Infection

If pyogenic organisms infect such a tuberculous empyema the clinical picture is that of acute pyogenic empyema, masking in most the true tuberculous nature. Theoretically such infection could occur by the blood or lymph supplies, but in practice the organisms enter from without through some fault of technique in gas replace-

ment, or from within by rupture of the lung, which again is very liable to result from this treatment, when recurring fluid causes a high intrapleural pressure, and a pleuro-pulmonary fissure may be established. Streptococci, staphylococci, colon bacilli, and many forms of anaerobic organisms have been found. The greenish tint of tuberculous pus now disappears ; the effusion is of a dirty yellow colour, is definitely thicker, and has an excess of polymorphs. The effect on the pleura is thickening, by increasing fibrosis of its external layer.

There is no evidence that the prognosis is any worse than that of uncomplicated tuberculous empyema: some observers say it is better ; but the literature on treatment is full of contradictory advice, and leaves one with the impression that unlike conditions are being compared, and the individual patient lost sight of in the battle over the comparative advantages of conservative and radical measures.

Conservative Treatments

Conservative treatments range from aspiration, aspiration and air replacement, aspiration and irrigation with so-called antiseptics as saline, gentian violet, acriflavine, and Dakin's solution, up to replacements with gelatin and the various forms of oleothorax. Widely varying results have been reported, each method having its champions prepared with irrefutable arguments for its mechanical and disinfecting properties. Thus Rosenblatt quotes twenty-one cases treated by aspiration and replacement with a saturated alcoholic solution of methylene-blue, and all followed up for from one and a half to eleven years. Eleven survived, but the period necessary for them to become fever-free was five months to two years ; in only four did he continue pneumothorax when the cavity was entirely free from effusion, and then re-expansion produced more retraction and mediastinal displacement than ordinary pneumothorax, which may be a not altogether unmixed blessing to the patient.

The same applies to oleothorax. Some writers are still claiming disinfecting properties for gomenol, although Gloyne showed in 1927 that it has no such value, and can act for good only by producing a thickened and therefore less permeable pleura, thus inhibiting or delaying the absorption of bacillary toxins. Bufalini quotes four cases to show its special value ; Gullbring, fifteen which were not favourably influenced. Recently, Josewitch has made claims for the oil of cajuput, saying it is less irritant and toxic, while it dilutes the substances affecting the pleural surfaces, but he advocates it as a permanence only where radical treatment is impossible. This is in keeping with the conclusions to be gathered from published results as a whole, where major surgery shows up as far superior to all conservative treatments, and thoracoplasty as the method of choice. Intercostal tube drainage by open or air-tight methods may, of course, be indicated as preliminary by toxicity.

As in pure tuberculous empyema the prognosis is improving with advances in technique. Thus Berry reported of seventy-five cases only fifteen recoveries, but Hedblom has recently obtained obliteration in thirty-seven of fifty-nine, and the Tuberculous Empyema Commission states that of 134 with virulent infection sixty-five were cured and twenty-eight clinically well. These figures are a great advance on Hedblom's result of only six recoveries in sixty-one treated by conservative and minor surgical measures.

Conclusion

We must therefore agree with the finding of the last report of the Committee of the National Tuberculosis Association of America that while no one seems to have found a specific for this distressing complication, we can only hope to follow the method productive of the greatest good, and conclude that while a predominantly tuberculous infection *may* warrant conservative treatment, a predominantly secondary infection or an underlying lesion which renders the empyema a secondary consideration demands major surgery.

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MAJOR HYSTERIA*

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To those who are unfamiliar with the endless variety of physical disturbances which may occur in hysteria the disease presents many diagnostic pitfalls. It is my intention in this paper to give some illustrations of these and to attempt to show how the disease may be diagnosed and how it may be treated. I shall endeavour to use simple terms to explain what seem to me to be the mental mechanisms through which hysterical states are liable to develop.

Evasion and Dissociation

Most of us have the germ of hysterical behaviour in ourselves. Our ability to forget unattractive appointments, and our desire to be deaf to unpleasant facts show a mental process not unlike that seen in major hysteria. In these examples our forgetfulness or deafness relieves us of some mental disturbance or bother. We do not really fail to remember or to hear, but we are able to push unpleasant facts into a corner of our brain which we are able to forget about in everyday life. In achieving this we demonstrate our ability to split our mind into compartments which are almost "watertight." In hysteria this faculty is developed to a remarkable degree, and is described under the term—dissociation of the personality. Both in our own case and in the case of the hysteric, this juggling trick which we play with our minds enables us to avoid some difficulty, and there can be no doubt that the individual who makes a habit of evading awkward situations is thereby cultivating a series of mental processes which, under certain circumstances, may lead to the development of some manifestation of major hysteria.

* An address delivered to the Edinburgh Women's Medical Society, February 12th, 1935

Hysteria is more common in the female than in the male, and this is probably due to the fact that our social habits tend to protect her from unpleasant situations, and in some ways encourage her to avoid difficulties. By means of this habit of splitting the personality it is possible to evade reality, and many people live in a world of fantasy with the aid of this trick. Such people interpret events in the way which gives them most pleasure. This habit, which is so marked in hysteria, seems to be rather an irresponsible and lazy way of dealing with the hard facts of life. Further, the desire to avoid difficulties leads such people to depend unduly on those with whom they live. This common desire or tendency to fall back on others for help is illustrated by the lady who prefers that notice be given to the cook by her husband.

One remarkable effect of what one may call the evasive attitude to the difficulties of life is that the person who goes through life in this way is of little use in an emergency. Unaccustomed to deal with difficulties she may react to an alarming situation by hysterical screaming or by passing into a state of hysterical coma. The screaming reaction is likely to develop when there is an imminent risk of physical injury—for example, if the house goes on fire. When, however, there is no imminent physical danger, the response to a distressing situation will more often be the development of an unconscious state. An accident may have been witnessed; the experience is very upsetting, and the individual carries out the remarkable conjuring trick which enables her to put the whole of her mental processes into the corner which she forgets. In this way she passes into a state of oblivion, in which she can neither see, hear, speak, move, nor feel.

It is obvious that the hysterical reactions in these examples enable the individual to escape as far as possible from the difficulties of the situation. No one expects a screaming woman to do anything helpful if the house goes on fire; while the scream carries the message "Come and help me!" and illustrates again the tendency to fall back on other people for help which these cases show. Hysterical *fainting* will never occur when such a reaction involves physical danger to the individual, as when the house goes on fire, but in certain circumstances, as in the second example, a period of unconsciousness provides an obvious method of escape from an unpleasant situation.

"Subconscious Malingering"

The reluctance to face unpleasant situations is therefore a common tendency in the community, and is found in all classes of society. An ability to dissociate the personality may be made use of to achieve this purpose, and when it is exercised to an extreme degree major hysteria may result. Now just as we, unless we use unusual self-analysis, fail to realize why we have forgotten about an inconvenient duty, so the hysteric fails to realize why he has become deaf, dumb, blind, paralysed, or tortured with pain. There is always, however, a very definite reason both for our forgetfulness and for the development of hysterical symptoms. By making use of this trick of dissociation, the individual, as far as one part of his personality is concerned, refuses to remember, or to see, or to move; so that a part of the mind is actually exercising deliberate fraud. If you accept this interpretation of the mechanism of the mind in hysteria, then we can conclude that the hysterical reaction is really one of "subconscious malingering." The true conscious malingerer knows what he is doing and why he is doing it, but the hysterical patient succeeds in shutting off the malingering part of his mind so successfully that his ordinary or principal personality does not realize that there is anything unworthy in his behaviour.

It should be strongly emphasized that the development of hysterical disturbances always achieves some selfish purpose, and for this reason the patient displays a peculiar state of unconcern at her disability. This *belle indifférence*, which Janet emphasized, will in many cases suggest at once to the experienced observer that the symptoms are hysterical. When a normal person becomes blind or paralysed from the effects of organic disease he is always somewhat concerned. The hysteric often, however, shows little concern, and is usually brought to see the doctor not on her own initiative, but because of the anxiety felt by sympathetic relatives.

Suggestibility

Another feature of individuals subject to hysterical attacks is the extraordinary degree of suggestibility which they show. For example, in a case of hysterical anaesthesia it is quite easy to suggest to the patient that some part of the skin will be very sensitive, say at the base of the nails. In this way a part that was previously anaesthetic may become exquisitely tender.

This suggestibility gives a clue to the method by which the patient produces hysterical phenomena. These phenomena are probably produced by the power of suggestion exerted by one personality on a second personality. The second personality, for example, decides that it is desirable that one limb should become paralysed, and succeeds in suggesting this so effectually to the main personality that paralysis actually develops. The second personality, in fact, hypnotizes the first. It is not surprising, therefore, that the phenomena seen in hysteria resemble very closely those seen under hypnosis. In hypnosis the personality of another person suggests the phenomena which should occur, while in hysteria it is a second personality in the same individual which provides the suggestive force.

The two points, therefore, which I wish to emphasize particularly are that hysterical manifestations achieve some selfish purpose, and secondly that the disturbances which occur are produced by a process of suggestion. These points are of great importance when we come to consider the most suitable line of treatment for cases of hysteria.

Diagnostic Difficulties

The clinical features of major hysteria are so protean that experienced physicians often mistake the resulting clinical picture for that of serious organic disease. In my own experience I have known hysteria to be diagnosed as epilepsy, tic douloureux, encephalitis, brain tumour, migraine, disseminated sclerosis, poliomyelitis, amyotrophic lateral sclerosis, myelitis, rheumatic fever, tuberculous disease of a joint, and acute abdominal emergency.

I propose now to describe a few cases of hysteria which illustrate some of the difficulties in diagnosis which may be encountered.

CASE I

A woman aged 31 years was admitted to the National Hospital for Nervous Diseases in London, suffering from double vision and indistinct vision, which had been present for three years. On examination there was an internal squint with small pupils immobile to light. The movements of the eyes separately were full, and it became obvious that there was hysterical spasm of convergence. The condition was quickly cured, but recurred after leaving hospital. She was then taken to see a brain surgeon, who, after carrying out ventriculography, diagnosed a tumour of the third ventricle. Operation was carried out, but no tumour was found. The patient died as a result of the operation, and at post-mortem examination the brain was found to be perfectly normal.

CASE II

A chemist, aged 21 years, was admitted to Ward 21 of the Edinburgh Royal Infirmary in August, 1933, where Professor Murray Lyon asked me to look after the case. He was then suffering from complete paralysis of the legs and trunk, which had been present for six months. The paralysis followed an attack of influenza. After this illness the patient was admitted to hospital, where he remained for three months without improving. The diagnosis made at this time was that of amyotrophic lateral sclerosis of the spinal cord.

He was later admitted to Professor Murray Lyon's ward on account of slight glycosuria, which proved to be of no significance. On examination the muscles of the trunk and legs were found to be in a state of great rigidity and almost complete paralysis. The slightest attempt to move the legs appeared to cause great pain. The reflexes were normal, and the jerky attempts at voluntary movement made the diagnosis of hysterical paralysis obvious. The arms were quite normal. The patient was treated in the usual way, and he was able to walk quite normally when discharged from hospital. No satisfactory explanation for the development of his symptoms was discovered at that time. After leaving hospital he went to visit some friends in England, where he had massage treatment for his legs. While having this treatment he got steadily worse and was finally admitted to hospital, where his condition was diagnosed as rheumatic fever. He again developed complete paralysis of both legs, and had to be brought home by ambulance. His doctor asked me to see him again, and when I examined him in his own home four months after he left the Infirmary he had well-marked hysterical paralysis of both legs. I questioned him very carefully with regard to anything that could have caused the condition. At first he could tell me of nothing that had been upsetting him, but just as I was beginning to despair of finding the cause he said, "Oh, well, I'll tell you." He went on to say that his heart was in the open air of the country, and that he dreaded the thought of spending his life in a chemist's shop. He had never told his people about this, and they were greatly surprised when I told them. It is probable that his original illness had given him time to think over his future, and the more he thought about it the less he liked it. His evasive attitude to difficulties prevented him from frankly expressing his fears to his relatives, and so his second personality succeeded in suggesting to him that he should remain an invalid in order to get out of his job. The patient is an only child. His father died of alcoholism. He lives with his mother and aunt. The latter is mentally unstable. I attempted to explain to him how his symptoms had arisen, and advised that he should take up some work that was more congenial. A dramatic improvement followed this interview, and within a few days he was able to walk again. His doctor kindly informed me nearly a year later that he has remained well, and that he spends the day looking after his hens. He develops a slight limp if he walks far.

An interesting feature of this case was that when the extensor spasm of the legs was forcibly overcome, not only was there a marked emotional reaction with weeping, but the patient at once developed paralysis of the arms. His second personality was no doubt determined that paralysis of some sort should persist. We paid no attention, however, to the paralysis of the arms, and it passed off, as we assured him it would, by the following day.

The development of hysterical paralysis following some illness is not uncommon in children. It is often caused by the fact that the child enjoys the extra attention she receives, and therefore determines to continue her illness for as long as possible.

CASE III

A married woman, aged 44 years, was sent to see me on June 20th, 1934. She was suffering from a partial paralysis of the legs which came on six weeks previously. The paralysis came while she was lifting a heavy basket. There was a feeling of great strain in the back, which made her collapse. Her feet then began to go dead, and this dead feeling gradually spread up her legs. By the time her doctor arrived a few hours later there was complete paralysis of both legs and also of the left arm. Later she became partially blind, and had double vision. She was violently sick every morning, and complained of great pain in the back. Her condition was diagnosed as rheumatic fever, and she was kept in bed, with two nurses in attendance. She did not, however, approve of this diagnosis, and changed her doctor. By the time she was sent to see me she was able to walk a little, but the gait was fantastic and obviously hysterical. Physical examination revealed no change in the reflexes, and the jerky attempts at movement confirmed the hysterical character of the disability. Sensation was not tested, as it is better to avoid testing for sensory loss in these cases if possible. The ocular disturbances, which were no doubt due to a spasm of convergence, had passed off.

On inquiring into her private affairs I learned from her that she had been married for six years to a man considerably below her own social class. Her husband worked in a corporation department, and paid no attention to her at all. She said that he was terribly selfish, and was interested in nothing but his achievements as a golfer. Three years ago, when abroad, she had a similar attack of paralysis, which came on after she found that her husband had been unfaithful to her.

She was advised to go away from her husband for a time and was told that she would soon make a complete recovery. She left home and was soon quite fit again. She has now returned home, and her doctor has recently informed me that her walking is now quite normal. Unfortunately her relations with her husband are still very strained, and there are some financial worries. Her doctor writes to say: "She has made a wonderful recovery, but is surrounded by so many snags that she might go off the deep end again if any of them should trip her up!"

This patient is quite a normal person, just as normal as many of us are, and her case illustrates how hysteria may develop in quite ordinary people if circumstances are sufficiently adverse. This was well seen in the so-called shell-shock cases during the war. These were, of course, cases of major hysteria which had developed in healthy young men under the stress of modern warfare.

Another point worth noting is that in a large proportion of these cases there is a history, as in this case, of a previous breakdown of some sort. Recently, for example, I was asked to see a nun with hysterical paralysis, the subconscious purpose of which was to get out of doing her work in the convent. The history of her case revealed that at the age of 16 years she had had a breakdown following her mother's death. The chief symptom of this was general weakness, but the illness lasted for several months, and during this period her sisters looked after her.

Hysteria is not uncommon in convents, as the decision to become a nun may be due to a desire to get away from the difficulties of life. This, as we have seen, is the type of personality liable to develop hysteria. During the sixteenth century there were outbreaks of hysterical convulsions in many convents. As soon as one nun was attacked it would spread to all of her colleagues.

Hysterical fits are remarkably common, and many such cases are brought into the out-patient departments of a general hospital.

CASE IV

An unmarried woman, aged 25 years, was sent to see me in November, 1932. She had suffered from fits for eight years. These had been very frequent recently, but had stopped while she was in a nursing home. A neurologist had diagnosed her condition as being due to petit mal. This diagnosis seemed the likely one until her mother informed me that as she was coming out of the attacks she always said, "Oh, Daddy!" Another suspicious feature of her history was that after being away for a holiday she had repeated attacks the very day she arrived home. This patient's father died of alcoholism a few years previously, and the mother's devoted care of her only

child was unable to protect her from witnessing some scenes which must have been very distressing to the girl. While it was difficult to be certain that the fits in this case were entirely hysterical, I thought it wise to try the therapeutic test. I therefore discussed the problem with her on two or three occasions, stopped the luminal she had been taking, and assured her that she would have no further attacks. I think she came to realize that the attacks had probably been started by the strain of having to face her intoxicated father, and she was delighted to know that they were of no serious significance. It is obvious that the examiner must show to the patient no trace of any doubt he may have with regard to the diagnosis. She was encouraged gradually to resume her full activities, which included dancing and many games. It was also important in this case to attempt to lessen the girl's dependence on her mother, so we advised her to get into the habit of making her own decisions, and of facing her difficulties without having recourse to her mother's help and advice. There have been no further fits since that time, which is now over two years ago, and the patient's general health is excellent.

There is no time to refer to many other forms of hysterical disturbance, which include deafness, blindness, aphonia, amnesia, blepharospasm, contracture, tremor, and spasms of various types. They are usually easily diagnosed by anyone familiar with the signs of organic disease, who remembers and realizes that hysteria may cause an endless variety of symptoms. Considerable difficulty in the diagnosis may arise when hysterical manifestations develop in a patient suffering from organic disease. For example, a patient with slight optic atrophy may, by means of a hysterical mechanism, become quite blind. This combination of organic and functional disease may lead to claims of "cure" of organic disease made by any variety of treatment from osteopathy to a visit to Lourdes.

Practical Points in Diagnosis

The diagnosis of hysteria becomes almost a matter of instinct. There is something very characteristic about these cases. As has been already mentioned, there is an attitude of unconcern with regard to the symptoms. In addition to this the patient shows an absence of frankness in describing her symptoms, and may appear to be watching you out of the corner of her eye, so to speak, as though she expected to be blamed for her incapacity. With regard to the motor disturbances which may occur, the diagnosis is based on the failure of the type of disturbance, combined with the physical examination, to agree with the symptoms and signs of organic disease. Irregular and jerky attempts at voluntary movement are very characteristic of functional weakness. The tendon reflexes are often very brisk, but the abdominal and plantar reflexes are normal. The brisk abdominal reflex is particularly useful in excluding organic disease in cases of spastic hysterical paralysis. It is important to remember that hysterical symptoms may include great pain, a symptom which often misleads the physician. The most useful weapon of all with which to diagnose these cases is experience of nervous diseases, both functional and organic.

Principles of Treatment

Treatment is usually highly satisfactory if it is directed to combat the factors in the aetiology of hysteria which I have put forward for your consideration. As I have mentioned, the hysterical manifestation gives subconscious satisfaction because it has enabled the patient to evade some difficulty or to achieve some selfish purpose. We must also remember that the symptoms have been produced by a process of suggestion, and that the patient's suggestibility will often enable the symptoms to be cured by the same means.

In the first place, it is wise to approach the problem with great sympathy and understanding. We must never scoff at symptoms, and must not use terms such as hysteria or nerves to the patient or relatives. Having concluded that the symptoms are largely or entirely functional, we adopt a quietly confident attitude. We can explain to the patient that the nervous system becomes overstrained and sensitive, or, in a case of paralysis, that the muscles are working against each other. We go on to explain that with suitable treatment the condition will quickly get better. If the cause of the symptoms is apparent then the removal of the circumstances which caused the breakdown will suffice to effect a cure. In order to avoid any recurrence we have a talk to the patient on two or three occasions and, by explaining how the symptoms have arisen, indicate that prevention of future attacks rests with herself. If the case is severe and of long standing we insist on removing the patient from her environment, which is usually responsible for perpetuating the incapacity. We explain that a complete rest is necessary, and take the patient into a home or hospital. We keep all visitors and letters away, and the patient is not allowed to read. She is visited only by the doctor and one or two nurses accustomed to deal with such cases. Endless trouble is caused by people seeing the patient or treating her (masseuses, for example), who, instead of distracting the patient's attention from the disability, draw her attention unduly to the affected part. After the first examination no further examination should be carried out except for the purpose of demonstrating improvement. It is better never to test for hysterical anaesthesia, but to ignore it.

Discipline and Co-operation

While the avowed purpose of this type of Weir-Mitchell treatment is to rest the patient, the real value of it is that it removes the patient from sympathetic relatives, and that it also removes any factors which allow the hysterical incapacity to give satisfaction. The patient soon begins to ask for the regime to be relaxed, but we sympathetically insist that we can afford to take no risks and that complete quiet must be continued until the incapacity is *cured*. This trifling discipline is a splendid stimulus towards recovery, for by insisting on the strict regime we remove the last trace of satisfaction derived by the incapacity, and substitute a strong suggestive force, which conveys the thought, "The sooner I get better, the sooner I'll get out of this." However much the patient complains, the doctor must be quite firm. This has the added benefit and tonic that, for the first time for probably a very long while, the patient is having to do what she is told to do, whether she likes it or not. Most patients will co-operate without more than a few mild protests, but a few will become frankly abusive, either to the doctor or, more probably, to the nurse in charge. In such circumstances it is the doctor's plain duty to speak very frankly to the patient and to indicate that she is making no effort to co-operate in effecting a cure, and that the patient's whole attitude is one of extreme selfishness. He can also say that if she does not want to get well she had better go home. A little frank exchange of opinion along these lines has sometimes the most pathetically dramatic results. The patient often realizes only too well the truth of your accusations, and, after having been given time to consider the position, decides to do anything advised and apologizes for what she has said. This type of hysteria, which requires a little firm talking to, is fortunately not common; usually the whole treatment can be carried out with the preservation of cordial relations between the doctor and patient throughout. The following was a difficult case of this type.

CASE V

An attractive woman aged 34 years, the wife of a clergyman abroad, began, three years ago, while recovering from the effects of tonsillectomy and otitis, to suffer from pain above the left eye. No physical cause for the pain was found, and injection of the Gasserian ganglion with alcohol was attempted on two occasions. This, however, made the pain much worse, although considerable anaesthesia of the left side of the face was produced. In August, 1934, she came to this country as the pain was still very severe. The pain seemed to be very genuine, and was associated with twitching of the left side of the mouth. It was therefore considered advisable to divide the sensory nerves to the face on that side, and the fifth and ninth nerves and the nervus intermedius were divided in succession. Severe pain, however, continued to be complained of.

There was little evidence in this case that the pain might be functional. At the time the pain began, however, the patient, who had been ill, had been finding her duties as a clergyman's wife very tiring, so much so that she felt she could hardly face her responsibilities at that time. Another noteworthy detail was that her husband had become excessively fussy about her during her illness, and this might have caused considerable subconscious satisfaction. We accordingly decided to admit her to hospital, and to treat her as a functional case. Professor Bramwell kindly admitted her to his ward for the therapeutic test to be carried out. It was obvious that no half-measures would suffice in this case, so, with the patient's full approval, we instituted a strict regime. We sent her husband away, although he protested strongly that she would be much worse if he were not there to comfort her. A strict Weir-Mitchell regime was arranged, and the patient was left quietly to herself, except that the doctor and sister-in-charge visited her occasionally, to give her a few words of encouragement. As usually happens in these difficult cases, complaints began in a few days, and the patient's apparent charm became less obvious. She went out of her way to say unpleasant things about individual members of the nursing staff to their colleagues. After a week she became very difficult, and said she was no better and that she might as well be sent out. This gave the opportunity which should never be shirked in cases of this type. We firmly told her that she was making no attempt to co-operate and was behaving in a very selfish way, etc. We also told her that if she did not wish to get well she could go out whenever she wished. The effect of this frank talking-to was remarkable. After thinking it over she decided that she would stay in hospital, and apologized for what she had said. The pain disappeared in a few days, and she left the ward after a stay of two and a half weeks in all. For the first time for three years she was free of pain. I shall quote from a letter received recently. "I must thank you just ever so much for all you did for me. Only you and Sister know just all you did do for me. I can only look back on that two and a half weeks with a feeling of deep humiliation and remorse, and yet I am grateful, really grateful for it. My husband is looking so different already, he was so thrilled to find me so much better." Further letters show that the improvement has been well maintained.

As you can well realize, cases such as this may be very difficult and exhausting to deal with.

Many forms of treatment are useful according to the degree of suggestive force they can convey. Strong faradism can be used very effectively as a suggestive measure in cases of flaccid paralysis, aphonia, and hysterical gait. The forceful overcoming of contracture is most effective if accompanied by the suggestion that the procedure will cure the condition. This manipulation is accompanied by considerable apparent pain, but the main reaction is emotional, and the patient invariably weeps as she sees her treasured stiff leg bending. A sudden fright, a thunderstorm, or a visit to Lourdes may also cure hysterical paralysis in a most dramatic way. Some doctors treat cases of hysteria successfully by methods which appear to be brutal and, while one prefers to avoid such methods, the results achieved are often very satisfactory, and permanent. Some years ago the Medical Committee of the National Hospital for Nervous Diseases, London, gave me permission to follow up a series of cases of hysterical paralysis which had been treated in the institution. One of these gave an interesting report of her previous treatment.

CASE VI

A single woman, aged 25 years, was admitted to the National Hospital in 1927. Her legs had been weak for three years and completely paralysed for a year before admission. She was treated with massage and faradism by one of the nurses, but made little progress until Dr. X treated her for two hours with faradism and exercises. When I saw her nearly two years later, she said of Dr. X's treatment, "He was awfully cruel, but it was he who cured me, and I have remained well ever since. I felt very bitter and unhappy after leaving hospital, and did not feel a bit grateful when people said, 'How lucky you are to make such a good recovery.'" She said that Dr. X made her lose her self-respect. He told her that her breakdown was due to not wanting to work. She was so upset by this that she made up her mind to recover her self-respect. She therefore started an arts and crafts studio with £2 capital, refused to borrow any money, and succeeded in making her business a success. This was a remarkable achievement, and restored her self-respect.

That case is quite a good testimony to what one may call the bullying line of treatment.

Prognosis: Prophylaxis

The prognosis in major hysteria is always very good if the case can be dealt with adequately, and, particularly if the circumstances which encourage a hysterical retreat from difficulties at home can be adjusted, the cure should be permanent. Complete recovery from even long-standing paralysis may often be achieved in two or three days, and should not take more than two or three weeks. Under trying circumstances, however, the symptoms may recur as long as forty years later, as in the following case.

A married woman, aged 60 years, had been paralysed for eight months before admission to the National Hospital on January 24th, 1930. This paralysis proved to be hysterical, and was quickly cured. This patient at the age of 20, forty years previously, became paralysed following her mother's death, and remained paralysed for six years. Recovery then occurred spontaneously, and she remained fit for a very strenuous life, including very hard work during the war.

Hysterical paralysis is not uncommon in old people, and is usually diagnosed as due to organic disease. There is a charming old lady (aged 75 years) at present in the Longmore Hospital for Incurables whose legs have been quite paralysed for five years. Occasionally, however, she gets up and walks in her sleep without any apparent difficulty.

Prevention is, of course, better than cure. Children should be educated to make their own decisions and to face up to difficulties. On no account should they come to feel that they can get their own way if they make enough fuss about it. If, as is often the case, devoted parents are quite incapable of exercising even a little kindly discipline, then the child should be sent to boarding school if possible, and every effort should be made to educate the parents to adopt a more reasonable method of bringing up their children.

The Cambridge University Press will publish shortly an annotated list of *Medical Practitioners in the Diocese of London, 1529–1725*, licensed under the Act of Parliament 3 Henry VIII, cap. 11. The object of this short book is to show in what manner the Bishops of London handled their great and serious responsibility respecting the licensing of medical practitioners.

SOME CONSTITUTIONAL DERMATOSES*

BY

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It cannot be too loudly or too frequently stressed that the medicine of the skin is no more and no less than a reflection of general medicine, and that in consequence the proper study of mankind is man's skin. It would indeed be an extraordinary circumstance for this one organ of the body, dependent upon the same physiological resources and controls as the rest of the organism, to maintain a separate existence and bear no close relationship to the reactions of that organism.

In no sphere of medicine is the skin of more vital importance or of such valuable assistance to the observant clinician as in that of constitutional medicine, relating, as it does, the physical and temperamental characteristics of the individual and the peculiarities of his reaction to environmental changes of any and every kind. I believe that too little stress is laid upon the distinction between pathological medicine or disease, and constitutional or individual medicine, which is rather in the nature of physiological reaction. A simple definition would indicate that pathological medicine is the natural reaction of any —or the majority of—individuals, organs, or tissues, to environmental changes such as old age, irritation, infections, and structural abnormality. Thus it is probably true that all who work in haematite mines sooner or later contract silicosis of the lungs. Constitutional medicine, on the other hand, concerns the particular, and in some measure peculiar, response of an individual to environmental changes which would produce no reaction, or no similar reaction, or response in other individuals, or in the majority of other individuals. Thus out of a hundred bakers working in a bread factory one or two may react by the development of a dermatitis.

This is not a new, but the very oldest, conception of medicine; but I think it is still fundamental to the proper understanding of many of our problems. When history records the truly wonderful advances made in the field of medicine during this century it will be scientific progress that will be acclaimed. I wonder whether it will not at the same time record a failure to hold in our grasp truths which had been handed down through the ages, and which have made great physicians in the past, even in the absence of our wonderful scientific knowledge of to-day?

The Skin as an Index of Constitution

I will briefly remind you of the intimate relationship of skin to individual types and to common disease. Recall the fractious, freckled skin of the red-haired, and the fragile skin of the blond; the rebellious skin of the plethoric, the quiet skin of the placid, and the restless sensitiveness of the skin of the mentally and physiologically unstable; the awkward blush and sebaceous irresponsibility of puberty, the flushings and discomforts of the menses and the menopause, and the querulous stubbornness of the senile skin—these are not without meaning.

Such expressions as "the pallor of fear" and "flush of excitement," the "sweat of anxiety" and "glow of content," the "itch of desire," the "hair-raising terror," and "goose-flesh" skin indicate the temperamental significance of the skin. On the more substantial side a review of the major diseases will recall to the mind a multitude of reflections of such disease in the skin, such as the sensory changes and atrophies, green pallor and jaundice, oedemas, dystrophies, nail changes, facial peculiarities, pigmentations, and secretory disturbances—quite apart from the specific dermatoses associated with so many affections as pink disease, the fevers, leukaemias, certain anaemias, and adrenal and sympathetic disease.

There are, indeed, few patients with medical or surgical disease who have not the mark of that disease written upon their skins, and I insist that it is a pity if we, who should rely so much on our observation, are not to make full use of what is thus displayed. In this connexion I would mention one obvious reason for functional and organic nervous disease playing a prominent part in dermatology. It seems to me the natural thing when we remember first that the skin, as the ectoderm, functioned as the sole organ of perception, sensation, affection, and protection in those stages of development prior to a central nervous system, and, secondly, that the central nervous system, now mainly responsible for these functions, is merely a specialized portion of the ectoderm.

I propose to take four common and troublesome dermatoses and endeavour to interpret them for you in terms of general constitutional medicine. I believe that such interpretation will remove much of the mystery, and with it the difficulty, in understanding these conditions and their treatment. I will consider infantile eczema, seborrhoeic eczema and sycosis, lichen simplex, and rosacea. It is obvious that I cannot do more than indicate certain lines of thought with regard to each of these, for there is no opportunity here to undertake an exhaustive study of each one.

Infantile Eczema

Infantile eczema is an itching of the skin, usually of the face, provoked by exposure in a child who, at the age of 2 or 3 months, is becoming a human being, and who for inherited—and sometimes for environmental—reasons is temperamentally sensitive. The eruption which is produced by the rubbing—to relieve itching—assumes a mask distribution on the face, because the face is the exposed part, and rubbing of it on the pillow avoids the hollows of the eyes, sides of the nose, and mouth. In a rather older child, who has learnt to use his fists, the eruption will be mostly of the eyelids, nose, and mouth.

I do not believe that any other factors cause infantile eczema, or that the "alimentary eczema," "seborrhoeic eczema," and "infective streptococcal eczema" of other writers have any existence in fact. I do not suggest that teething or gastro-intestinal upsets, or napkin irritations, climatic changes, or emotional disturbances may not provoke exacerbations—I know they do—but they are not primary causes. The infective organisms which can be cultured from fissures behind the ears are entirely secondary, and disappear with treatment which pays no regard to their existence. I have never yet encountered an infantile eczema due to cow's milk or any other foodstuff, and I do not conceive the possibility of such an aetiology.

Infantile eczema is entirely a manifestation of a temperamentally sensitive child with a sensitive skin. Because, and as a part, of this mental sensitiveness, they are unusually intelligent and bright, unusually active mentally and physically, are acutely appreciative of and reactive to their environment, and are not only ready at all times for entertainment, but will entertain a company as no other child can do. If they are not permitted to be crippled by their constitutional disorders these individuals will mostly outstrip their fellows and make their mark intellectually or artistically. They are not at all hampered by being kept back from school until they are between 7 and 10 years old—as they should be. In infancy they should be taken off the breast, for the majority are born of temperamentally unstable mothers, and that intimate association of breast-feeding is not helpful. Most will thrive on simple cow's milk, sugar,

* Based upon lectures delivered before the Halifax Division (January 22nd, 1935) and the Scunthorpe Division (March 7th, 1935) of the British Medical Association.

and water, with a little cream or cod-liver oil emulsion—a perfectly normal diet.

For the first twelve months of life they should be as cabbages—with the maximum of rest and quiet, regular habits, and complete absence of excitement and noise. If this is not achieved the result may be a persistent eczema, or some other temperamental embarrassment—possibly for life. It is surely the height of folly, if it is not criminal, to crucify such an infant on a cross splint or to harness its limbs to the four bed-posts.

Treatment on the medical side must relieve itching, and externally, tar, as in the following application, is invaluable.

℞ Picis carb. praep. (*B.P.*) ... ... gr. xx
Zinc. oxid. ... ... gr. cxx
Paraff. moll. ... ... ad ʒ j

If more than this is required, bromide of potassium in a rhubarb-and-soda mixture, in dosage sufficient to relieve the itching (not less than 5 grains t.d.s.) is indicated. In any case hyd. cum cret. internally is valuable.

Seborrhoeic Eczema and Sycosis

The infective seborrhoeic eczemas and sycosis reflect another side of constitutional medicine. These patients, children of 7 years or about the age of puberty, males of 20 years, and women at the menopause, have, among other disturbances of function, seborrhoeic skins, and seborrhoeic respiratory and seborrhoeic gastro-intestinal tracts. Their skins, with lowered resistance against infection, develop a chronic and intractable purulent oozing, scabbed, and glazed, red inflammation of the scalp, ears, eyebrows, eyelids, nose, muzzle, beard area, and flexures generally. Their mucous membranes, flabby, oedematous, with excess of secretion, are invariably infected, and present infected nasal sinuses, polypi, enlarged tonsils and adenoids, pyorrhoea, soft teeth, and dental sepsis. Their gastro-intestinal tracts, atonic, with excessive mucus and alteration or masking of other secretions, give rise to flatulent dyspepsia and constipation, impaired digestion and assimilation of foodstuffs and a consequent malnutrition, particularly anaemia from iron-lack and avitaminosis.

To approach these cases as skin diseases yields nothing but despair and hopelessness. Their skins resent any local applications, and the whole dismal picture will persist under the best hospital conditions. Viewed as a whole, however, and treated along rational lines, they respond immediately. The first essential is to deal with the dental and nasal sepsis—nine out of ten of these cases have an infected antrum. That is the direct provocative cause of the overlying seborrhoeic eczema or sycosis. The response to this measure is often dramatic.

Then, to enable both skin and mucous membranes to regain a healthy state, diet must be regulated as for a hypotonic dyspepsia with constipation. Extra iron and vitamins must be administered, and it is of great value to give general ultra-violet light irradiation as a tonic measure. This malnutrition, secondary to gastro-intestinal seborrhoea, is the responsible constitutional background.

Lichen Simplex

Yet another aspect of constitutional medicine is reflected in a number of cases of lichen simplex chronicus, an affection also described as "circumscribed prurigo." The condition is an intensely itching, circumscribed, thickening of the skin, often warty, purplish in colour, and usually found on the palms or soles, the knees, the ulnar aspects of the elbows, sometimes on the nape of the neck, the mid-back, and elsewhere. The majority—but not all—of the cases are seen in women at or after the menopause, who are of stout build, and who have recently tended to increased obesity. There is always a high, and often a very high, blood pressure without primary renal disease; there is always a complaint of symptoms suggestive of high blood pressure, such as headaches, dizziness, a tendency to fall, and insomnia.

I do not know of any local skin treatment which is effective in these cases for more than a brief period. Response, however, to tar therapy or *x*-ray treatment is good, provided the general constitutional derangement receives attention—a derangement probably dependent upon poor adaptation to the endocrine-sympathetic changes of the menopause. Treatment at first should be by rest in bed, and should aim at reducing blood pressure and weight by strict dietetic measures. These must be continued at that level which will maintain a satisfactory equilibrium. Small doses of calomel, careful and moderate administration of thyroid, and sometimes luminal in quarter-grain or half-grain doses are of the greatest value in conjunction with proper dietetic control.

These cases approximate more nearly than any others in dermatology to the old conception of the gouty diathesis, and should be benefited by occasional spa therapy along rational lines.

Rosacea

Rosacea—let us avoid the term "acne rosacea"—is a variable flushing of the skin of the face, particularly the nose and chin, a triangle on each cheek and the central V of the forehead. Upon this is superimposed a papular, granulomatous eruption of the skin, which occasionally breaks down and becomes secondarily infected, and which only by accident involves the hair follicles. There is no relationship between acne and rosacea, and this is manifest in the fact that whereas in acne the skin can, and should be, scrubbed with an irritant soap and a loofah, the majority of those who consult you for rosacea do not use soap and water, having learnt from experience the extreme sensitiveness of the skin to such injury.

Rosacea is built up on facial flushing, and the causes of rosacea are those of facial flushing. Always there is a background of temperamental and emotional sensitiveness, the usual cause of blushing, and in not a few cases this constitutional factor, with some increased mental anxiety or perturbation, is the whole of the problem. Sometimes gastric disturbance, a flatulent hypotonic dyspepsia, or upper abdominal trouble is the provocative cause of rosacea, of which we are reminded by the "red nose of indigestion" and the well-recognized relationship between facial pallor or flushing and gastric states. Pelvic disturbances in women—the flushings of the menses and of the menopause remind us—must also be considered. A mere functional dysmenorrhoea or an organic trouble may call for attention here. Finally, sepsis in the nose, mouth, or throat may, not unnaturally, provoke local flushing, which in the susceptible will become rosacea. Occasionally such eruption will be mainly unilateral, corresponding to the side of the infected antrum or tonsil.

Rosacea can be cleared without consideration either of the underlying constitutional sensitiveness or the particular provoking cause, but not with any degree of permanence. In all cases, therefore, these possible provocative factors should be investigated and dealt with, while the underlying emotional sensitiveness may call for treatment by simple mild sedative-tonic measures, or by homely psychotherapy.

My purpose in this communication is not to offer anything like a complete review of the affections which I have considered. A whole lecture, or even a course of lectures, might with advantage be devoted to each one. I have merely used these common disorders to direct attention to the importance of general, and particularly of constitutional, medicine in interpreting skin reactions. More often than not, a skin eruption is a reflection of deeper significance, and the study of medicine loses much of value by neglect of this branch.

Clinical Memoranda

Interstitial Full-term Pregnancy

The following case is reported as the condition is rarely met with, and, according to the gynaecological textbooks, should result, in the early months of pregnancy, either in rupture into the peritoneal cavity or in evacuation through the uterus. This patient, however, developed a fibrous sac thick enough to withstand the strain of the developing pregnancy right up to full term, when false labour came on and the child died.

A primigravida, aged about 20 years, was admitted on October 10th, 1934, complaining of abdominal pain on and off for the last five to six months, and a pregnancy which had gone nearly two weeks over full term. She had thought she was in labour at full term and called dais, but nothing came away, and for twelve days the foetal movements had not been felt. All through the pregnancy she had not felt well, and had been sitting and lying down in her house.

State on Admission.—The patient was a thin, slight, pale girl, and looked very ill and weak. She was unable to lie flat on her back, as that position caused pain in the epigastrium. Temperature 98.8° F.; pulse 110, weak and of low tension; respirations 28. The abdomen was rather pendulous, with a tumour the size of a full-term pregnancy, but the foetal parts could not be clearly made out, though the head seemed to be in the upper part on the left. There was no ballottement, and no foetal heart could be heard. On vaginal examination a poorly developed cervix could be felt in the posterior part of the vagina, with the external os patulous but the internal os closed. No foetal parts were on the pelvis. A little bright blood resulted from the examination. The lower pole of the tumour was high up in the pelvic brim, and the body of the uterus could not be made out clearly apart from it. The pelvic measurements were small—that is, interspinous 7 in., intercristal 8¼ in., and external conjugate 7 in.

Progress.—The patient, kept quietly in bed under observation and given tonics and stimulants, seemed rather better and more comfortable after two days, not having complained of any severe pain. No contractions were ever felt in the tumour, and still no foetal heart was heard. The temperature had kept below 99° and the pulse had dropped to 86. She then began to suffer with loose, frequent stools, and four days after admission there was definite dysentery. On October 16th, as she was no better and the temperature had risen to 100°, examination was made under chloroform, and it was now found that the internal os was patulous and the uterine sound could be passed only 3½ in. to the right and posteriorly. On digital examination the uterus could be definitely felt to be small, very soft, and empty but for a cast lying partly detached in the cavity. There was a large erosion of the cervix. Permission for laparotomy was obtained, and this was done the next morning.

Operation.—After administration of subcutaneous saline the abdomen was opened by a long median incision, more than half of which was above the umbilicus. The tumour was found to have a thick, yellowish, fibrous wall, and was bound down with many adhesions to the anterior abdominal wall and in the upper pole to the omentum. These were separated, and the tumour drawn out of the abdomen. It was also adherent to the mesentery posteriorly, and there was considerable oozing as it was separated. It was then seen that the tumour was growing from the left cornu of the uterus, and three inches of healthy Fallopian tube with normal ostium was lying on its lower pole, the inner end being lost on the surface of the tumour a little distance from the uterus. The ovary was not identified. The pedicle was clamped and the tumour cut away. It contained a full-term macerated female child lying in the left sacro-posterior position, with large placenta below, and a very little greenish-brown fluid in the amniotic sac. Three silk mattress sutures were applied to the uterine cornu, and the round ligament and ovarian vessels also secured with silk ligatures. The right tube and ovary looked normal. A gauze pack was left against the mesentery where it was still oozing, and the end brought out through the middle of the incision, the rest of which was closed in three layers. Sections were taken from various parts of the lower portion of the sac in order to identify its origin.

A slow convalescence followed. The pack was removed after forty-eight hours as the oozing had ceased. The wound healed well, and the stools became normal, but the temperature, which had not been above 100° for the first week, rose to over 102° on the eighth and ninth days, with rigors, and then subsided for another four days, subsequently rising to 99° or 100° during each day. After the sixteenth day a lump the size of an orange gradually developed on the left of the umbilicus, deep in the abdomen, where the pack had been, and on November 9th an abscess cavity was opened through the middle of the old incision. After that the patient steadily improved, and was discharged well on November 28th. The uterus could then be felt, normal in size and position, and there were no signs of pelvic inflammation.

Pathological Report.—Superficial tissue from the attachment of the cyst showed uterine tissue, as did deep tissue from the same place. "? Gland" was found to be the ovary. A lump in the origin of the placenta proved to be placental tissue. The wall of the sac showed fibrous tissue only. The attachment of the sac to the uterus showed uterine tissue; the sac itself was fibrous, the ovary was separate and distinct. The report added: "Probably the pregnancy had occurred in the intrauterine part of the Fallopian tube and developed towards and into the peritoneal cavity through the thinned-out uterine wall."

Thanks are due to the civil surgeon, Lieut.-Colonel Townsend, I.M.S., for his assistance at the operation, and to Dr. Abdul Hamid, pathologist to King George's Medical College, for his report on the pieces sent for sectioning.

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Rupture of the Diaphragm following Slight Trauma

The notes on the following case of severe internal injuries after comparatively slight external violence are of interest.

The patient, a man of 26, was admitted to the Royal Lancaster Infirmary on January 2nd, giving the history of having been knocked down by a lorry. Four ribs were fractured on the left side, and he presented all the signs of a left haemothorax, a diagnosis of laceration of the lung being made.

Shortly after admission, he began to show signs of an intra-abdominal lesion, and the left kidney was suspected. Urine obtained then was free from blood. He was deeply cyanosed and his condition extremely bad. On the next day free fluid was detected in the abdomen, and he was passing almost pure blood per urethram. A diagnosis of intraperitoneal rupture of the kidney, with possible implication of the spleen, was made, but the patient's general condition made operation out of the question, and he died shortly afterwards.

Post-mortem Findings.—There were no external marks of violence on the body whatsoever. The lungs were uninjured. The left side of the diaphragm contained a tear about four inches long, through which the left kidney had been forced, the upper half of which was almost completely separated and lying free in the pleural cavity, attached to the lower half by only a thin strip of tissue. The spleen was ruptured in four places. In addition, there was a fracture in both anterior fossae of the base of the skull.

It was clear from the inquest that the man had been little more than pushed over by the lorry travelling at about five miles per hour, and there was no question of a crush of any sort.

We wish to express our thanks to Mr. Edmondson for his permission to publish this case.

KENNETH R. TATTERSALL, M.R.C.S., L.R.C.P.
E. BRUCE HARVEY, M.R.C.S., L.R.C.P.
Royal Lancaster Infirmary.

Reviews

LAVOISIER, PRIESTLEY, AND CAVENDISH

In his book on the *Three Philosophers* (*Lavoisier, Priestley, and Cavendish*)[1] Mr. W. R. AYKROYD refers to the comparative neglect which the life-history of Lavoisier has received at the hands of English writers. Each of the three men of science had a share in bringing about the revolution in chemistry which took place in the eighteenth century ; the nature of the remarkable advance then made is well understood, but it is hardly realized that Lavoisier was also the virtual founder of the science of nutrition, and on the subject of his general life-history there have been few English writers, and those not always accurate. Mr. Aykroyd's sympathetic account will therefore be welcomed. The scientific work of Lavoisier cannot be properly understood without a reference to the contemporary work of Priestley and Cavendish ; the author has therefore skilfully dovetailed accounts of these scientists in his narrative, and by so doing has greatly enhanced the interest of his book. His principal object, however, has been the portrayal of Lavoisier, who, he considers, has never received justice from the professional historian, and for whom he entertains an enthusiastic admiration.

In scientific outlook Lavoisier was a prophet. Quite at the outset of his career he foresaw the direction in which real chemical progress lay ; he had a clear perception of the end foreshadowed by his theory, and his efforts were rewarded by an achievement which forms one of the great landmarks of scientific history. But besides being a scientist, Lavoisier was a man of good business capacity and wide interests. After he had established his position in natural science he set about securing his financial position, realizing the importance of money to those engaged in scientific work. He joined the Company of Revenue Farmers, one of the pernicious institutions of the old regime, under which a fixed sum was paid to the Government, while the farmers recouped themselves liberally out of the tax-payer's money. The large income obtained by this means was further increased by an appointment at the Arsenal. He succeeded ultimately in amassing a large fortune, but his private interests were never allowed to predominate over public duties. His post at the Arsenal and his membership of the Academy entailed much public work, which was further increased by his own efforts to ameliorate the deplorable social conditions of the time. Thus we find him occupied on questions relating to experimental farms, monopolist organizations, discount banks and insurance societies, canals, mines, prison reform, national finance, education, the standardization of weights and measures, and other matters of public importance. During the latter part of his life he seems to have been even more occupied with such matters than with his scientific work. He was largely thwarted by the unsettled state of the country, and, ultimately, through no fault of his own, was caught in the whirlpool of the Revolution and was one of the numerous victims of the Terror. Thus this public-spirited man and rare intellect was lost to civilization.

The book is illustrated with two drawings by Lavoisier's wife, depicting her husband engaged on experiments on respiration, and with portraits of the three philosophers. Berthelot's claim that Lavoisier was the discoverer of oxygen and the composition of water is referred to by the author, and the position of the three scientists in regard to these discoveries is made quite clear. Mr. Aykroyd's book is replete with interesting incidents, and it belongs to that select class of works which bear reading more than once.

[1] *Three Philosophers* (*Lavoisier, Priestley, and Cavendish*). By W. R. Aykroyd. London: W. Heinemann (Medical Books) Ltd. 1935. (Pp. 227. 10s. 6d. net.)

A STUDENT'S VADE MECUM

Elementary teaching, engaged as it is in laying foundations, may well be considered as the most important of all teaching. The recognition of this principle has apparently inspired the preparation and issue of *L'Exploration Clinique Médicale*[2] by Professor EMILE SERGENT, aided by a number of distinguished professional colleagues. It is described as an elementary treatise ; it includes more than 1,100 pages ; and its purpose is to guide and inform the student from the very beginning of his hospital career. If, as may well be the case, the novice, when introduced to this considerable volume, is impressed by the formidable quality of the study he has elected to follow, he will soon discover that efficient aid and direction are at hand, for Professor Sergent has made his chapters not only comprehensive but also models of clear and interesting exposition. We are accustomed to these qualities in the writings of our French colleagues, and here there is no lowering of the standard.

As a preparation for hospital work, and as a companion during his clinical studies, the student with a knowledge of French could hardly do better than select this book. Compared with our English manuals more attention is given to exposition and interpretation, and to symptoms as distinct from physical signs, while there is included also a fairly complete account of departments of study which tend on this side of the Channel to be classed as specialties rather than as part of the essential body of medicine. Thus the examinations, chemical and microscopical, conducted in the clinical laboratory; radiology in its application to the abdomen and nervous system ; and the testing of the organs of special sense—all receive consideration on a generous scale. Illustrations, too, are numerous and helpful. In a word, the intention of the book, to provide the theoretical and practical knowledge which is necessary to fit the student to turn to advantage the clinical opportunities of his hospital service, is fully realized. Our own students will for many reasons prefer one or other of the excellent manuals written in a familiar tongue, but a practitioner who desires to revive his foundation knowledge, to note some modern developments, and to enjoy the charm of French literary values, could spend some pleasant and profitable hours in reading Professor Sergent's serviceable and attractive pages.

CATARACT

Dr. CLYDE A. CLAPP of Baltimore has published a monograph on *Cataract : Its Etiology and Treatment*.[3] In this book of moderate size he gives an excellent account of the normal crystalline lens and its pathological changes. The book begins with two chapters—which will be well known to English readers—by Miss Ida Mann, on the comparative anatomy of the lens and the anatomy of the lens and its ligament. There follow chapters on the nourishment and growth of the lens, and its physiology and chemistry in normal and pathological states. From a consideration of the normal lens the author passes to the congenital anomalies other than cataract, and thence to the pathogenesis of cataract by the effects of toxic drugs, radiant energy, and bodily disorders. The varieties of congenital cataract are indicated, and he discusses the production of the traumatic, secondary, and senile forms. These chapters take up about one-half of the book, the other being devoted to treatment. Under the heading of

[2] *Traité Eléméntaire d'Exploration Clinique Médicale. Technique et Séméiologie.* Published under the direction of Emile Sergent. Paris: Masson et Cie. 1934. (Pp. 1,176 ; 410 figures, 10 coloured plates. Broché, 120 fr. ; cartonné toile, 145 fr.)

[3] *Cataract : Its Etiology and Treatment.* By Clyde A. Clapp, M.D., F.A.C.S. London: Henry Kimpton. 1934. (Pp. 254 ; 92 figures. 18s. net.)

non-operative treatment the author deals with some score of attempts, advocated at some time or other, to influence either the progress or the extent of cataract. Again and again the conclusion is reached that each treatment gains a measure of notice only to fall into desuetude, and one comes across such phrases as: "It fails to give any convincing figures showing the value of the treatment"; or "The variations found were similar to those found in untreated cases." Some "treatments" have indeed proved dangerous, and more likely to increase or originate cataract than cure it—for example, radium and other forms of radiant energy. After noting a series of drugs that have been exploited, the author concludes:

"Each drug has its advocates, and the results are somewhat similar. In view of these results it would seem that it makes but little difference what type of treatment is utilized. Probably the chief benefit is derived from the psychological effect in making the patient mentally more comfortable."

If the gentle arts of the physician fail to check or disperse cataract the craft of the surgeon has a long and successful record, albeit sometimes spotted with failures. The evolution of operative measures, from the earliest couching to present-day technique, shows an ever-increasing insistence on scrupulous care in the choice and preparation of the patient, in the actual details of the operation, and in after-care. What was once done—and in the East is still done—by the wayside, at a casual meeting, and by most primitive methods, opened a window to the light, that, alas! too often closed again for ever. To-day the recognition of the hair-line of division between success and sight, and failure and blindnes, has brought a refinement and delicacy of preparation which may seem to fetter the surgeon; nevertheless the skill and steadiness of the surgeon's hand and eye remain the dominant factor.

Dr. Clapp has written an interesting book. It is by no means exhaustive or exhausting, but it is written for students and practitioners, and without doubt it will give both a comprehensive view. There is a foreword by the veteran Dr. W. H. Wilmer.

THE AUTONOMIC NERVOUS SYSTEM

The functions of the autonomic nervous system are occupying a great deal of attention at the present time, and knowledge is rapidly expanding. Professor ALBERT KUNTZ's book[4] on the subject has now passed into a second edition, and will accordingly be welcomed. Much new matter, particularly that which bears on the rapidly developing practical applications of the subject to medicine and surgery, has been incorporated and the book thoroughly brought up to date. The outlook throughout is largely physiological, and it is a pleasure to see that the term "parasympathetic," as applied to the craniosacral autonomic system, is not so much in evidence as recent writings might have led one to fear. We heartily endorse the author's opinion that "The temptation to make undue use of the most recent and best illustrated contributions is ever present. This tends to create the impression that the latest and most detailed work is the most significant, while the original discoveries which led to these later expansions fail to receive the proper credit. The author desires to give due credit to the pioneer investigators. . . ." We consider that he has succeeded in doing this, and has produced a well-balanced presentation of a subject which occupies a large place in contemporary medical scientific literature.

If a word of criticism might be pronounced it is regarding the bibliography. It is unfortunate that this, which is large and valuable, should have been placed in an appendix and grouped by chapters of the book, these being referred to merely by numbers. Suppose, for example, one wishes to use the book for finding out what is known on the autonomic control of the urinary bladder, and wishes to trace a reference, say on page 323, to "Head and Riddoch (1917)," it is necessary first to find out that page 323 falls in Chapter XII, then to find, on page 631, references to Chapters XII and XIII grouped together, and finally to trace on page 633 the reference in question. It would surely be better for the whole of the bibliography to be alphabetically arranged, since all ambiguity is avoided in the text by the insertion of the date after the authors' names.

[4] *The Autonomic Nervous System.* By Albert Kuntz, Ph.D., M.D. Second edition, enlarged and thoroughly revised. London: Baillière, Tindall and Cox. 1934. (Pp. 697; 73 figures. 35s.)

DISEASE IN CHILDHOOD

The latest addition to *The Practitioner's Library of Medicine and Surgery* (volume vii) is devoted to *Pediatrics*,[5] and the name of Professor D. C. Darrow appears as "associate editor." It is an ambitious work of well over a thousand pages, written by over thirty contributors, who have been chosen, according to the preface, because they "can comprehend the viewpoint of the general practitioner." Random sampling has indicated that despite this specification the book differs little from other large textbooks on the subject, and regarded in this light it does not appear to offer any outstanding advantages. Special mention may, however, be made of excellent chapters by A. D. Kaiser, on diseases of the upper respiratory tract; by J. A. Myers, on tuberculosis (though far too complex for general use); and sections on the newborn, by L. A. Koch. The work is well illustrated, stoutly bound, and contains a full index. The outlook, however, is predominantly American, and the better-known textbooks already available in this country need not fear comparison with it.

IMMUNITY, PROPHYLAXIS, AND CHEMOTHERAPY

An international scientific conference was held at Frankfurt a.M. in September, 1934. The contributions to this conference are now published in three volumes. The third deals with Problems of Bacteriology, Immunity, and Experimental Therapy.[6] Both the nature and the interest of the papers in this volume vary greatly; it contains genuine discussions of certain subjects, besides isolated original papers and the uninspired general surveys usual on these occasions.

In the first category are a series of papers which deal critically with the question of bacteriaemia in tuberculosis and Loewenstein's methods of studying this question; an illuminating discussion follows. Professors Kolle and Prigge contribute a discussion of methods of testing the protective power of antigens for diphtheria prophylaxis. They propose a method based on the use of a large number of animals, a standard antigen for comparison, and a large dose of toxin for testing the degree of immunity produced. Dr. Hartley recommends testing by intracutaneous injections, and points out the difficulties arising from the use of a variety of types of antigen. Practical aspects of prophylaxis are represented also by a paper by Professor Albrecht on gas oedema toxins and antitoxins. There is a general survey and some discussion of Brucella infections and psittacosis.

The first paper in this volume deals with the effect on the growth of tissue cultures and micro-organisms

[5] *The Practitioner's Library of Medicine and Surgery.* Vol. vii, *Pediatrics.* New York and London: D. Appleton-Century Company Inc. 1935. (Pp. 1211; 31 figures. 50s.)

[6] *Probleme der Bakteriologie, Immunitätslehre und Experimentellentherapie.* Band III. Wissenschaftliche Woche zu Frankfurt a.M. September 2nd to 9th, 1934. Edited by Prof. Dr. med. W. Kolle. Leipzig: Georg Thieme. 1935. (Pp. 248; 53 figures. M.15.)

of substances, mainly mustard oils, in the gaseous state. It was found that these substances in the form of gas inhibit growth in amazingly low concentrations, far lower than was required when they were dissolved in water. The observation is of considerable importance in connexion with action at a distance and mitogenetic rays. Professor Meinicke discusses a new serological reaction for the diagnosis of tuberculosis. Other isolated contributions include "The Antigenic Relationships between Rickettsia and *B. proteus* X 19," "Disinfection with Heavy Water," and "The Recovery of Adsorbed Complement." The chemotherapeutic section includes papers on the chemotherapy of syphilis, tuberculosis, tropical infections, and schistosomiasis.

Notes on Books

The seventh edition of the work on *Physical Diagnosis*,[7] which originally was brought out by the senior editor, Professor ELMER, and Professor ROSE, in 1917, has now appeared under the care of the first-named. Of the two parts, the first, on the physical examination of the normal body, occupies more than half the book and includes a well-illustrated chapter on radiology in physical diagnosis by Dr. Sherwood Moore of Washington University, and another on electrocardiography by Dr. Drew Luten of the same university, who also contributes a new, and the last, chapter in the book, on the diagnosis of abnormalities of the heart-beat. The second part is devoted to the physical diagnosis of diseases of the respiratory and circulatory systems. The first part, however, contains a considerable amount of information about morbid conditions of systems other than those of the circulation and the lungs. This successful work is gracefully dedicated to Dr. George Dock, "to whom everyone who has had a part in the making of this book is indebted."

The ninth edition of the French equivalent of the well-known British medical annual, *L'Année Thérapeutique*,[8] produced by Dr. A. RAVINA, is notable for a much larger number of references to English and American journals than usual. The result is a definitely improved production, while its up-to-date nature can be judged from the inclusion of the Congo-red method of treating haemoptysis and of Snapper's "A.T.10" in the treatment of tetany. As a modest summary of the medical activities of 1934 this is a useful little volume.

The very extensive field of the History of Medicine in France[9] has been covered with due sense of proportion by Professor LAIGNEL-LAVASTINE, secretary-general of the International Society of Medical History, and Dr. RAYMOND MOLINERY, and has been translated by Professor E. B. Krumbhaar, the editor of this handy series on the history of medicine. The importance of the subject justifies a larger volume than in the early numbers of *Clio Medica*, for it starts from the first wave of civilization, when curative magic played a great part in the medicine of the first inhabitants of Gaul, as is shown by their artistic efforts on the walls of caves. The imposing record is carried on through successive ages, including its great periods of expansion in the Middle Ages, the thirteenth century, after Louis XIV, and especially in the eighteenth and early nineteenth centuries, up to the present time. Specialism is dated as far back as the Renaissance, when paediatrics and psychiatry were among the first, and were followed by epidemiology; but little progress was really made until the second half of the last century, when Charcot founded neurology and Pasteur's work exerted a world-wide influence.

[7] *Physical Diagnosis*. By Warren P. Elmer, B.S., M.D., and W. D. Rose, M.D. Seventh edition. London: Henry Kimpton. 1935. (Pp. 919; 342 figures. 35s.)

[8] *L'Année Thérapeutique*. Ninth edition. By A. Ravina. Paris: Masson et Cie. 1935. (Pp. 192. 18 fr.)

[9] *French Medicine: Clio Medica*. By M. Laignel-Lavastine and M. Raymond Molinery. Translated by E. B. Krumbhaar, M.D. New York: P. B. Hoeber, Inc. 1934. (Pp. ix + 187; 14 illustrations. 2.50 dollars.)

With the title of *Sixty Years of Service, 1874 to 1934*,[10] the Mission to Lepers has published an interesting review of the work accomplished on behalf of lepers and their children. The greater part of the book is devoted to the advances made since the jubilee of this organization in 1924. In India many thousands of pounds have been spent in providing hospital facilities, treatment blocks, laboratories, and buildings for housing early cases; better qualified medical staffing has been promoted, including the provision of whole-time doctors and nurses, but the after-care of discharged patients still calls for more attention. Dr. R. G. Cochrane contributes an account of the progress in treatment during the last ten years, in which he refers to the possibilities of control and even of prevention. In Africa, and in China, there has been an increasing measure of activity. The report is excellently illustrated by photographs, and affords a detailed survey of what is being done and what is planned for the future.

The volume entitled *Papers of Charles V. Chapin*[11] edited by FREDERICK P. GORHAM, comprises sixteen of the numerous articles written by one of the most eminent living hygienists, who for forty-eight years was medical officer of health of the city of Providence. The papers have been classified under the three headings of public health administration, the control of communicable diseases and epidemiology, and vital statistics. While all the papers will repay perusal, perhaps the most interesting are those on disinfection, in which Dr. Chapin shows how small a part is played by fomites in the spread of disease, and discredits the employment of terminal disinfection. An appreciation of Dr. Chapin by Dr. Haven Emerson and a short biography by the editor are prefixed to the work, and at the end will be found a bibliography of Dr. Chapin's books, pamphlets, contributions to current literature, and committee reports, numbering 153 in all.

That the author of *Statistical Methods for Research Workers*,[12] Dr. R. A. FISHER, was justified in believing that a volume which presented the latest results of the theory of statistical methods in the form of practical procedures would prove of value to research workers is evidenced by the rapid demand for a fifth edition. The new material in this latest issue includes a further enlargement of the section on the analyses of covariance and sections on Yates's correction for continuity, and the omission of an independent variate in regression equations. A historical note on the principal contributors to the development of statistical reasoning has been added to the introductory material. A valuable feature of the work is the arrangement whereby fresh material is inserted without altering the sections, tables, and examples, so that reference to these latter is valid irrespective of the edition used.

Lieut.-Colonel E. SELBY PHIPSON's little work entitled *A Medical Survey of Aden, 1933*,[13] consists of ten chapters, dealing respectively with the geographical and historical aspects of Aden, the organization of medical relief, Government and private hospitals, nursing organizations, dispensaries, fever hospitals, principal communicable diseases, medical administration of the port, water supply and drainage, and preventive medicine. The text is interspersed with aerial views of Aden and photographs of the hospitals, segregation barracks, and quarantine stations there. The book, which is founded on ten years' completed service in Aden, is a valuable contribution to public health literature.

[10] *Sixty Years of Service, 1874-1934, on Behalf of Lepers and their Children*. London: The Mission to Lepers. 1934. (Pp. 95. 1s. net; by post, 1s. 3d.)

[11] *Papers of Charles V. Chapin, M.D. A Review of Public Health Realities*. Selected by Frederick P. Gorham, A.M., Sc.D. Edited by Clarence L. Scamman, M.D. New York: The Commonwealth Fund; London: H. Milford, Oxford University Press. 1934. (Pp. 244. 6s. 6d. net.)

[12] *Statistical Methods for Research Workers*. By R. A. Fisher, Sc.D., F.R.S. Fifth edition, revised and enlarged. Edinburgh and London: Oliver and Boyd. 1934. (Pp. 319; 12 figures, 7 tables. 15s. net.)

[13] *A Medical Survey of Aden, 1933*. By Lieut.-Colonel E. Selby Phipson, D.S.O., M.D., M.R.C.P., I.M.S. Aden: Cowasjee Dinshaw and Bros.' Press. 1934. (Pp. 94; illustrated.)

TO MELBOURNE AND BACK

PART V.—WESTWARDS FROM PENANG

From Saturday, October 12th, to the following Wednesday the voyage will be westwards across the Bay of Bengal, until on the morning of October 16th the *Rajputana* will round the southern shore of Ceylon and put in at the harbour of Colombo. Here the vessel will be beset by a motley fleet of strange craft. Predominant is the Sinhalese canoe, made from the trunk of a tree, hollowed out and levelled off at the top, with an outrigger arrangement which makes this primitive boat extremely seaworthy. The canoes are manned by Sinhalese, Tamils, and Indo-Arab traders, intent on selling precious stones, brass-ware, and fabrics, or plying for hire between ship and shore, although by now visitors should be sufficiently experienced to withstand the blandishments of these enthusiasts.

About seven hours will be available in which to gain some impression of this lovely island, steeped in the legend of twenty-four centuries. Colombo, the present capital, is the eighth town of Ceylon to be chosen for this distinction, and it has become so important a centre that as many as fifty liners may be seen in the harbour at one time. This results in a most varied influx of visitors, so that one expects, and finds, several good hotels, such as the Grand Oriental, known everywhere as the G.O.H., and the Galle Face. Colombo and its environs offer a choice of several drives. One affords a visit to Wolfendahl Church, built by the Dutch in 1749, the Cathedral of Santa Lucia, the suburb of Mutwal, and then follows the Kelani River to the Victoria Bridge and the picturesque Bridge of Boats. Or visitors may go to the Victoria Park and inspect the interesting museum of Ceylon products, antiquities, and natural history, or climb to the top of the Great Reservoir at Maligakande, whence they look down on Colombo. Some will probably go to the picturesque Mount Lavinia, where Sir Edward Barnes, when Governor of Ceylon in 1824, built himself a marine residence in a particularly charming setting. Wherever they go they will find brilliant colouring and an infinite diversity of human life. Colombo is a busy mingling of East and West, and the seven hours will only serve to give an idea of the island's potentialities.

Bombay and the "Gateway of India"

At about noon the voyage up the west coast of the Indian peninsula will be resumed, and on the evening of Friday, October 18th, the party will reach Bombay. Steaming into harbour at about 7 p.m., and heading for the Ballard Pier, the travellers will sight, to the west, the famous Taj Mahal Hotel, the fine archway called the "Gateway of India," the Royal Bombay Yacht Club, and Bombay's distinctive water front, and on the mainland the ruins of the fort crowning the sheer heights of Bawa Malang.

Bombay is yet another island city, occupying a vital and commanding site, and there is enough to see in its twenty-two square miles to fill the short stay many times over. It will seem to visitors as though representatives of all the many peoples of India are marshalled for their inspection in this one city. Hindus of different castes, Mohammedans from the Punjab, Sikhs, Mahrattas, Parsees, gaunt tribesmen from the North-West Frontier, Jews, and Goanese all elbow and crowd each other in the busy bazaars. The variety of native dress, the babel of tongues and dialects, and the mixture of Western and Oriental road vehicles, ranging from luxurious limousines to primitive bullock carts, leave the visitor a little bewildered but thoroughly fascinated. That evening, after dinner, the drive up Malabar Hill to the Hanging Gardens should be taken; from this point the city, stretching away below, seems like a jewelled fairyland.

The following morning is free for an exploration of Bombay, and the choice will be between a harbour excursion to the famous Elephanta Caves, or, starting from the Apollo Bunder, a visit to the Prince of Wales Museum, the Science College, Hornby Road where the leading shops are situated, the Municipal Buildings, the busy Crawford Market, the Mint, and other notable points of the city. The drive round Back Bay to Malabar Point passes close to the Towers of Silence, where the Parsees deposit their dead to be devoured by vultures. This process occupies, on an average, half an hour; only the skeleton is left, which is then removed from its resting place and cast into a central well, where it crumbles into dust. This singular mode of interment arises from the veneration which the Parsees pay to the elements fire, water, and earth, none of which, they maintain, must be polluted by contact with the dead.

Aden and the Suez Canal

At about 1 p.m. on Saturday, October 19th, the *Rajputana* sails for a very different scene—Aden, lying at the foot of the Yemen plateau in the southernmost corner of Arabia. In Aden another human element is noticeable, for some of the African peoples are here. Mingling with the Arabs, Turks, and Indians are the shock-headed Somali, Egyptians, and Swahilis from the East African coast. The Somali boys will crowd round the ship in their canoes and dive for coins, and the inevitable trading boats, displaying ostrich feathers and ivory, will be much in evidence.

From Aden the ship enters the Red Sea by the Strait of Bab-el-Mandeb, passing Perim Island, and after a 1,200-mile run reaches Suez on Sunday, October 27th, where a short stop will be made. Next comes the passage through the Suez Canal, which, although only eighty-seven miles long, takes about twelve hours, as speed must be reduced to five and a half miles per hour except in the Great Bitter Lake. However, the Suez Canal is interesting, as the ship glides between two continents with only a few feet of water on each side. Twenty-nine miles from Port Said is Al Kantara, where the caravan track and the railway from Egypt to Syria are cut by the canal, and where the war cemetery holds 1,600 graves, over 300 of which are those of Australians and New Zealanders.

At about 8 p.m. on Sunday the party will arrive at Port Said, and will have about four hours to roam round this, the most cosmopolitan spot in the world. Port Said is the gateway between East and West, and its importance as a coaling station and its past history as one of the most vicious and lawless of all centres of human habitation combine to make travellers curious to see what modernization, improved communications, and an increase of "travel-mindedness" have done. It will be found to be an orderly, well-lighted town, with fine buildings, good hotels, and shops where anything and everything can be bought for use or ornament in Eastern or Western homes.

After Port Said comes the Mediterranean, and the next port of call is Malta. A few hours will be spent here, perhaps in climbing the steps to the Strada San Marco and so to Valetta's principal street, the Strada Reale. Malta has a turbulent history. Valetta, its capital, was built by Jean de la Valetto after he had repulsed the Turkish armament of Sultan Soliman II in 1565. The whole town was designed by one architect, Girolamo Cassar, and was completed in five years. From Malta the route is past Sicily, through the Straits of Bonifacio between Sardinia and Corsica, and Marseilles is reached on Friday, November 1st. From this point, no doubt, some members of the party will take the overland route to Calais, but for those who remain aboard there is still the journey along the coast of Spain and a visit to Gibraltar, where there will probably be a walk in the town and the lower fortifications, and a chance to buy tobacco duty free for the last time on the tour. Crossing the Straits there will be a short stay at Tangier, and on the same day the last stage of the journey to Plymouth will be begun. Three days after leaving Gibraltar the *Rajputana* will put in at Plymouth Sound, and the journey to Melbourne and back, covering one hundred days, will be completed.

British Medical Journal

SATURDAY, APRIL 27th, 1935

PHYSIOLOGY IN MODERN MEDICINE

The increasing recognition of the importance of applying physiological principles to medicine is evidenced by the almost simultaneous appearance of two large works, one by Professor Carl Wiggers,[1] the other an enlarged seventh edition of the late Professor J. J. R. Macleod's well-known book,[2] in the preparation of which he was aided by several collaborators. Both are written from the same standpoint, that of demonstrating the close relationship between normal reactions in health and reactions in the disturbances of disease. As Sir Michael Foster used to say, "What would you think of a meteorologist who said he was not interested in bad weather but only in good weather?"

The modern clinician aims at understanding the functional disturbances of patients rather than at describing diseases as concrete entities and cataloguing them as such. This makes the physiological method of approach to clinical problems essential, and students are no longer given the advice to forget their physiology on entering the wards. It was always superfluous, for the student was only too ready to do so; it is now fatal to discriminate sharply between the clinical and the pre-clinical. As Professor Macleod said in the first edition of his book: "It is a constant experience of clinical instructors who would employ scientific methods of instruction that they find the students not only indifferent to an analysis of their cases from the functional standpoint, but also that they are too inadequately prepared in fundamental physiological knowledge to make the analysis possible." Although the student may know the main facts of physiology he has not acquired the inquiring habit of mind which would enable him to apply that knowledge to practical medicine and surgery. This defect may be found even in students who have distinguished themselves in their physiological studies. For this lack of correlation between the laboratory and clinical studies Professor Macleod does not hold the clinical instructors alone responsible, considering that the laboratory courses are frequently given without any attempt being made to show the student the bearing of the subject on the interpretation of disease. Professor Wiggers, as the result of twenty-five years' experience of teaching in three prominent medical schools, has evolved a plan that stresses in the first place the application of the pure sciences to physiology, then inculcates general physiological principles, and finally compares the physiological changes produced experimentally with clinical manifestations seen in patients. It is interesting to remark how closely these two physiologists, experienced in teaching and distinguished for their researches, agree in their point of view and in the presentation of their material.

As might be expected from their special interests, Professor Macleod devotes a good deal of attention to questions of metabolism, particularly to that of carbohydrates, while Professor Wiggers has more to say concerning the circulation. Both books are admirably comprehensive, and are valuable works of reference. We should, however, like to emphasize that they are significant of a tendency which is steadily making itself felt: the desire to break down the barrier between the two great stages in the student's career—the laboratory and the ward. The teaching of pre-clinical subjects has been passing more and more into the hands of specialists who may not even be medical men at all and may not be interested in the problems amid which the students will ultimately have to spend their lives. There are two ways of overcoming this difficulty: one, the illustration of physiological principles during the pre-clinical stage by the demonstration of patients, the other by the insistent application of physiology and biochemistry in the actual working out of cases in the wards. The student can gain a clearer conception of the functions of the crossed pyramidal tract, for instance, by being shown a case of hemiplegia than by any diagrams or histological specimens; a case of myxoedema or of exophthalmic goitre emphatically impresses the functions of the thyroid gland upon his mind. On the other hand, the differential diagnosis of a case of jaundice in the ward can be made intelligible by recalling the natural history of the bile; anaemia becomes more interesting when interpreted as a failure of some stage of development to occur in the life-history of the red blood corpuscle. It is a correlation of this sort for which we are hoping as a result of the attempts now in hand to revise the curriculum; it is because such correlation is the guiding principle throughout these two books that we cordially recommend them.

[1] *Physiology in Health and Disease.* By Carl J. Wiggers, M.D. London: H. Kimpton. 1935. (42s.)

[2] *Physiology in Modern Medicine.* By J. J. R. Macleod, D.Sc., F.R.C.P., F.R.S. Seventh edition. London: H. Kimpton. 1935. (36s.)

THE 1935 BUDGET

Last year Mr. Neville Chamberlain was able to anticipate a substantial surplus on the basis of then existing taxes and decided to use a great part of it in reducing the standard rate of income tax from 5s. to 4s. 6d. The actual, and even more the psychological, effects fully justified that reduction, especially as the continuance of very low rates of interest for short loans has enabled the Government to finance the year's debt service at less cost than was expected. Consequently it was generally anticipated that, apart from any special demands on the Exchequer for the coming year, there would be further reductions in taxation in 1935–6, and that such reductions would be directed

more particularly to the benefit of taxpayers of small or moderate means. Recent Budgets have been dominated by the consideration as to how far it is possible to reduce the additional burdens imposed by the supplementary Budget of 1931. There were three main features of that Budget: the imposition of "cuts" in unemployment benefit and in the remuneration of various classes of public servants, including national insurance practitioners; the raising of the standard rate of income tax and the increasing of surtax rates by 10 per cent.; and a drastic reduction of the income tax exemption limit and of those portions of income which are allowed to go free of tax or which are taxed at half the standard rate. The last-mentioned alterations in the income tax scheme affected most seriously the taxpayers whose incomes do not exceed, say, £1,000, and of course in point of numbers those taxpayers form the great majority.

To any persons watching the weekly Revenue Returns during the last few weeks of 1934–5 the chief point of interest was the speculation as to how far Mr. Chamberlain would be able to go in the direction of restoring the pre-1931 scale of allowances. Unfortunately the need for providing increased amounts for the Defence Services during the forthcoming year has interposed another obstacle in the way of achieving this aim, and the Chancellor has had to exercise all the ingenuity at his disposal to gather together an estimated surplus for 1935–6 sufficient to permit him to provide a moderate instalment of the restoration of the old allowances. It may be admitted that from the point of view of benefiting the greatest possible number Mr. Chamberlain's new scheme of allowances is probably the best having regard to the inescapable limits imposed by the amount of the surplus at his disposal. But it is difficult to avoid the feeling that the man of moderate means is still hit unduly hard by the 1931 changes in the general scheme of allowances. For instance, if we take as a fair illustration the case of a married taxpayer with two children, the reductions in tax effected by the present Budget are as follows: Income £400, from £9 to £3 15s.; income £500, from £18 to £9 15s.; income £750, from £61 6s. 3d. to £54; income £1,000, from £106 6s. 3d. to £99. Where individual circumstances vary so much it is difficult to find any logical basis for comparing groups of taxpayers, but it does seem very probable that payment of £99 out of an income of £1,000 must impose a greater burden of personal sacrifice than payment of £9 15s. out of an income of £500—and that after taking into account the fact that the indirect taxation *may* press more or less equally on both. For this reason, while we naturally welcome any relief from the pressure of a high income tax and the complete restoration of the "cuts," we feel that the class of taxpayer so largely represented by our readers has not yet received adequate relief from the special sacrifices imposed in 1931 and continued in a slightly modified form in subsequent years.

It is to be hoped that the coming year will continue to show improvement in trade and in Exchequer receipts, that next year the Chancellor will be able to take yet another step towards the pre-1931 position, and that on that occasion the case of the professional man with an income of, say, £750 to £1,500 will receive more effective attention than it has hitherto been possible to afford him.

THE EXAMINATION OF PASTEURIZED MILK

Educated medical opinion in this country and the United States of America is convinced of the desirability of pasteurizing all liquid milk intended for human consumption. The aim of pasteurization is to render milk safe by destroying all pathogenic organisms that may be present. Both laboratory and plant studies have rendered it evident that exposure of the milk to a temperature of 145° F., or even slightly less, for half an hour can be relied upon to bring about this destruction. Failure to conform to this time-temperature combination, whether due to imperfection of plant design or laxity in operation, may result in a standard of safety below that which it is the aim of pasteurization to achieve. If the medical profession is to recommend liberal consumption of pasteurized milk, it must be satisfied that pasteurization is being adequately performed. Nothing but education of the plant personnel, and rigid inspection and control by public health authorities, will afford this satisfaction. Heat treatment, which originated as a method for prolonging the life of the milk, is now recognized as fulfilling a far more important function—namely, the removal of the potentialities of the milk for producing human disease. It is time, therefore, that the rough-and-ready method of so-called flash pasteurization was superseded, as it has already been in the large concerns, by the more satisfactory process of holder pasteurization, and that no milk which has not been subjected to heat treatment by the official designated holder process should be labelled or referred to as pasteurized. In this increasingly strict control of pasteurization the laboratory has clearly an important part to play. It is therefore of particular interest to note the appearance of a manual in pamphlet form[1] dealing with the chemical and bacteriological examination of pasteurized milk. This has been compiled by Professor I. Walker Hall and his colleagues of the Department of Preventive Medicine in the University of Bristol, and is based mainly on the experience gained during the past ten years in the practical supervision of pasteurization. There is at present no very simple test to prove that every particle of pasteurized milk has in fact been subjected to the heat process specified by the Ministry of Health. Professor Walker Hall describes the various methods that may be of value. Many of them would demand for their adequate description an amount of technical detail that would be out of place in these columns. Generally speaking, however, there are three methods suggested. The first depends on the examination for phosphatase. This enzyme is destroyed

[1] "On the Examination of Pasteurized Milk." George Gordon and Son, Ltd. (Printers), 19, Old King Street, Bristol.

in fifteen to twenty minutes by exposure to a temperature of 143° to 145° F. Its absence from pasteurized milk suggests that the heat treatment has been at least of this order of severity. The second is a measurement of the cream line, which is always reduced by pasteurization. The third makes use of the observations of Schern and Gorli that when washed guinea-pig red blood corpuscles are added to raw milk they rise with the cream to the surface, whereas in pasteurized milk they sink to the bottom, forming a pink sediment. Charcoal may be used with suitable precautions in place of the blood cells. Detection of the admixture of raw with pasteurized milk may be facilitated by the search for the enzyme amylase, as well as by a study of the cream line. These tests are still under trial, and will require thorough investigation under varying conditions before their real value can be assessed. It is to be hoped that other workers, alike in university, agricultural, and commercial laboratories, will follow the excellent example set by Professor Walker Hall, and so contribute to a progressive increase in the safety of the milk supplied to the people of this country.

INSULIN RESISTANCE AND THE PITUITARY

Insulin resistance is a state of affairs which may arise from a variety of possible causes—for example, an inability of the relevant tissues to respond adequately to the action of insulin ; the overaction of glands the hormones of which tend to raise blood sugar ; instability of the sympathetic nervous system, with resultant exaggeration of hepatic glycogenolysis ; and, finally, the over-production of hormones which actually prevent insulin from producing its normal effects. A further possibility is the existence of anti-hormones, as suggested by Collip, but evidence of this is as yet meagre. There is little doubt that many cases of diabetes are not readily explicable on grounds of pancreatic lesions, and in such instances we must consider factors of the nature referred to, which may be classed under the heading of insulin resisters. It seems that in diabetes due to definite destruction of pancreatic islets such as we find in young diabetic subjects there is usually difficulty in stabilization, and the condition rarely shows improvement in tolerance. In other cases, however, after a period of insulin treatment, marked increase in tolerance is observed, and it appears probable that some inhibitory factor has been either neutralized or perhaps even removed. It is in these latter cases that one is inclined to speak of the diabetes as resistant to insulin, as opposed to the pure pancreatic type, in which, from start to finish, there is an insulin deficiency. That the conception of insulin resistance is a justifiable one is borne out by the experience of occasional cases which are extremely difficult to stabilize, and which require doses of insulin altogether out of proportion to the severity of the clinical picture. One of the commonest causes of a certain degree of insulin resistance is an infection, and it is well known that such an event (for example, influenza, tonsillitis, diphtheria) always calls for an increase in the insulin dose required. It has been shown by several workers that diphtheria toxin is particularly potent in this connexion, the effect in the early stages being apparently due to an exaggerated activity of the adrenal medulla, or a more ready release of adrenaline into the circulation. Further, the action of toxins on the liver and muscles could readily lead to such changes in the cells that insulin would become relatively ineffective in promoting the dual reaction—formation of glycogen and oxidation of carbohydrate. The pituitary gland is also able to take part in producing insulin resistance by virtue of the diabetogenic component of the secretion of the anterior lobe, without which removal of the pancreas is unable to produce typical diabetes. Thus overactivity of the anterior lobe of the pituitary would lead to an insulin resistance. The recently established fact that removal of the pituitary gland is followed by an inability of adrenaline adequately to stimulate glycogenolysis suggests that the diabetogenic form of the pituitary hormones may act by way of the suprarenals. From the point of view of treatment the rational course to pursue in an unequivocal case of insulin resistance is to attempt to diminish the activity of the pituitary. In a recently published case[1] such a course was taken by irradiating the pituitary (hypothalamic) region. Clinically considerable benefit resulted, and from being a difficult case of insulin resistance the patient has become a relatively tractable diabetic, at any rate during the eight months following the treatment. The author goes further, and suggests this method as of possibly general application in the treatment of diabetes. Much more careful work will be necessary before such a method could be universally applied, since we are completely ignorant as yet of the remote effects of even a relatively slightly damaged pituitary. The actual dose used by the above author is stated as one-third that required to sterilize the ovary, which, whilst exerting an inhibitory action on the pituitary, does not destroy it. It is hardly necessary to add that this statement requires very cautious examination.

THE IMPORTANCE OF BIOLOGY

Of late years there has been an immense amount of discussion about the importance of biology in education, the place which it should occupy in the curriculum of various types of schools, and the methods of teaching which are most appropriate and effective in regard to it. Great strides have been made during the past quinquennium in introducing biological training into the secondary schools of this country, in equipping them properly for this purpose, and even in encouraging a biological rather than a physical or pathological approach to some of the main problems dealt with in university departments and medical schools. It is at last dawning upon politicians, sociologists, and economists that a biological outlook is valuable and may be essential in their own special fields of work and study. A little pamphlet entitled *Education and Biology*,[2] by Professor J. Graham Kerr, F.R.S., is a useful contribution to the last-mentioned aspects of this discussion. It is based upon a paper read to the Public Health Section of the Royal Philosophical Society, and, using Professor Kerr's own definitions, may be said to be concerned with the philosophy of living nature in its practical application to the upbringing of the young with a view to their health and efficiency

[1] Merle, M. E.: *Bull. et Mém. Soc. Méd. des Hôp. de Paris*, January 21st, 1935.
[2] The Grant Educational Co., Ltd., 91, Union Street, Glasgow. (4d.)

as citizens. He is not here dealing at all with the value of a knowledge of human physiology and of personal and domestic hygiene, but with such matters as the community regarded as an organism undergoing a gradual evolutionary progress involving an ever closer interdependence between the community as a whole and its constituent individuals ; the relation of nationalism and internationalism in a corresponding fashion ; the importance of the family as a social unit ; and the reality of biological capital represented by human ability in connexion with economic questions. Professor Kerr indicates clearly how such a biological outlook would correct political judgements, tend to correct racial prejudices, and bring about a closer understanding and sympathy between different classes and societies, and, indeed, with all living things. Two or three short quotations will show the kind of lesson he strives to inculcate.

"The acquisition of the biological outlook serves to drive home the immensely important lessons in citizenship that on the one hand the community depends for its prosperity upon the smooth and efficient working of its individual citizens, and that on the other these individual citizens in turn depend for their well-being upon that of the community as a whole. . . . As regards general education biology tells us with no uncertain voice that our ideal should not be that of mass production by a rigid code applied to all alike, but that of assisting each type of natural ability to develop along its appropriate lines. . . . The most fundamental factors that make for successful citizenship are not masses of information about all or sundry subjects, not superficial literary or artistic culture, but such things as health and strength, physical, mental, and moral ; character ; discipline ; tidiness ; manners ; loyalty to his fellows."

There is nothing new in this, but the importance of such considerations in a democratic community is obvious, and Professor Kerr has stated them with effectiveness and freshness.

MALARIA IN CHILDREN

The fourth conference of the International Association of Preventive Paediatrics, held last September in Lyons, devoted one session to the important subject of the prophylaxis of malaria in childhood. The report now published[1] gives a full account of the papers read at the meeting. Professor E. Cacace of Naples developed the pioneer ideas which he has been advocating for nearly thirty years on the fundamental need for the integral application and popularization of anti-malarial hygiene among children, especially in the pre-school institutions and elementary schools of infected regions. Professor Gillot (Algeria) stressed primarily the type of malaria transmitted to the foetus or at birth by the mother. Despite the disagreement on this form of the disease he stressed the need for active treatment of all pregnant women subject to malarial attacks. Quinine seemed to him to be the best remedy and did not cause abortion in such patients. For older children quinine prophylaxis could be carried out by giving sugar plums containing 20 cg. of a quinine salt, one to two daily according to age, during the epidemic season. Children under three years could be given chocolates containing a preparation of quinine. Dr. B. Barrowman of the Malay States contributed a paper dealing with certain aspects of the malaria problem as it concerns the child. He strongly urged that anti-mosquito and chemotherapeutic measures must be pushed together. The latter alone he regards as of very limited and doubtful value, especially in regard to child life. Quinine he administers as the ethyl carbonate in condensed milk, and atebrin he finds is well tolerated by children. In the subsequent general discussion several points of interest were mentioned. Dr. P. Armand-Delille drew attention to the marked differences between malaria in the European and in the native child. Professor P. Nobécourt described the real danger (illustrated by examples) of malaria conveyed by therapeutic blood transfusion.

[1] *Compte Rendu de la Quatrième Conference, Union Internationale de Secours aux Enfants.*

MEDICINE IN THE FAR EAST

In October, 1934, the Far Eastern Association of Tropical Medicine held its ninth congress in Nanking, China. Only on one previous occasion in the annals of the nation had a scientific international congress been held—the conference in Mukden, Manchuria, following the pneumonic plague epidemic of 1911, which laid the true foundations of Public Health in China. The congress of last autumn has given further encouragement to medical progress in that country. Volume i of the *Transactions*, edited by Drs. L. T. Wu and C. Y. Wu, gives an outline of the daily proceedings, and includes the papers read on bacteriology, biochemistry, cholera, helminthology, entomology, kala-azar and leprosy. In the bacteriological section a leading paper is that of Drs. Soda, Shimojo, and Horiuchi on the bacterial types of typhoid bacilli prevailing in the Far East and some of their unknown epidemiological characters. Another useful paper, in German, is by Drs. Hong and Ono on the epidemic types of bacillary dysentery in Shanghai. In their work on exanthematous typhus in North China Drs. Tchang and Lotsong record the production of a specific serum among larger animals such as monkeys and donkeys which appears to have preventive and curative properties. Most of the section on biochemistry is occupied with studies on preparations of vitamins B and C. Lieut.-Colonel A. J. H. Russell, dealing with cholera in China, showed that no decennial period has had so low an incidence of cholera in India as that of 1923-32—no doubt due to better-planned public health and preventive schemes. Anti-cholera vaccine (8,000 millions of vibrios per c.cm.) proved to be a valuable prophylactic in single 1 c.cm. dosage. Valuable results have followed the administration of cholera bacteriophage. The close relationship of the authentic cholera vibrio to the other vibrios is still unsolved. Most of the claims in regard to the isolation of cholera toxin cannot be substantiated. Though Colonel Russell referred to India as the home of cholera, Dr. J. W. H. Chun in his paper on the cholera problem in China stated that "the more we study this problem in Shanghai the less tenable becomes the theory of an importation of the infection." Drs. Forkner and Zia of Peking presented a paper on the theories concerning the transmission of kala-azar. A summary of their results is against infection by sand-fly bites: all their work tended to prove that the pharyngeal tonsils and nasal secretion were effective

channels of escape of the parasite from an infected person, who could remain a carrier of the parasite long after all symptoms of the disease had disappeared. A weak point in this paper is the authors' contention that the Leishman-Donovan body can produce experimental kala-azar without going through the cycle stage of flagellation. Leishman-Donovan bodies belong to the group of haemoflagellates that are transmitted by insects, and few would agree to any theories that would brush out this stage. Leprosy and its latest forms of treatment received attention, and the volume concludes with a paper by Dr. Huizenga of Kiang-su on sterilization in leprosy. On the whole, the author thinks it is an unjustifiable procedure. Volume i is well produced and carefully edited. It is printed by the Mercury Press in Shanghai, and published by the National Health Administration, Nanking. Volume ii will be issued shortly, and the price is £2 for the two volumes.

LANDMARKS IN PROCTOLOGY

In publishing a volume of collected papers[1] the Medical Committee of St. Mark's Hospital, London, which celebrates its centenary this week, offers a graceful tribute in honour of Frederick Salmon, the founder, and in commemoration of the centenary of the institution. When the idea of founding this institution occurred to Salmon he was acting as surgeon to a dispensary in the East of London, and his reason for the undertaking, which met with much professional opposition, is stated in his opening address, which is reproduced in the present volume. He was impressed by the fact that diseases among the poor which were without manifest signs, such as fistula and other affections of the lower bowel, failed to attract the interest of the charitable public, were frequently altogether untreated, and "involved a degree of personal distress appalling to be contemplated." A statement in the *Medical Times and Gazette* for 1857 corroborates this: "It is but a short half-century since diseases of the rectum were almost wholly in the hands of quacks; the information respecting them possessed by well-educated members of the profession was meagre in the extreme." Salmon's aim, therefore, was not to create a specialty in surgery, but to found an institution for the relief of the sufferings of his poorer fellow creatures, and he was entirely successful. He acquired possession of the dispensary building referred to; this he fitted up as a hospital with seven beds, and called it the Infirmary for the Relief of the Poor Afflicted with Fistula and Other Diseases of the Rectum. Three years later the hospital was removed to Charterhouse Square, where twice the number of beds were available, and thirteen years later it was removed to the present site in the City Road. Salmon retired in 1859, when he received a notable testimonial subscribed for exclusively by his poor patients in appreciation of his work. The centenary volume contains a history of the progress of the institution and a description of the present hospital of St. Mark's. It also contains two excellent portraits of Salmon, his original address at the opening of the institution, a lecture on stricture of the rectum delivered by him in 1832, and a description of his operation for internal haemorrhoids. The rest of the volume consists of fifty-three articles from the published works of past and present members of the staff during the past hundred years. In making the selection the committee has chosen, among the earlier papers, those which give original descriptions of surgical procedures or which are of particular historical value, and, among modern papers, those which give the best accounts of the treatment of the present time. The range of subjects is wide, so that the volume has almost the character of a textbook on proctology.

[1] *Collected Papers of St. Mark's Hospital, London. Including a History of the Hospital.* Centenary Volume, 1835–1935. Compiled by the Medical Committee, April, 1935. London: H. K. Lewis and Co. Ltd. (30s. net.)

A SYMPOSIUM ON MEDICAL EDUCATION

On the occasion of the celebration of the three hundreth anniversary of the Royal Petrus Pazmany University of Budapest, the Hungarian journal *Orvosképzés* has issued a special number dated March, 1935, which is devoted to medical education, under the editorship of Professor Emil v. Grósz. Of the fifty-two articles contained in the issue twenty-two are in Hungarian; twenty in German (including one by Professor A. von Eiselsberg on medical education in Vienna and one by Professor L. Aschoff on medical education in Germany); six in French (including one by Professor Anthony of the Museum of Natural History, Paris, on the organization of scientific research); three in English (on the teaching of physiology and biochemistry by Professor A. Szent-Györgyi, teaching and research work in morbid anatomy by Professor Ernest de Balogh, and training of physicians for public health service in Hungary by Béla Johan); and one in Italian, by Professor Stefano de Tóth, on instruction in obstetrics and gynaecology. With the exception of the contribution in German by Professor Julius von Darányi, on education in public health in civilized countries, all the articles deal with the various branches of medical education in the Hungarian Universities of Budapest, Pécs, Szeged, and Debrecen, and testify to the high standard attained.

As announced in our News column last week, the King has consented to open the British Post-Graduate Medical School at Hammersmith on Monday, May 13th. His Majesty will be accompanied by the Queen, and after the opening ceremony, which begins at 11.30 a.m., Their Majesties will inspect the School and the Hospital.

Sir John Bland-Sutton celebrated his eightieth birthday on Sunday last (April 21st) at his country house near Deal, and received many messages of congratulation.

The annual oration before the Medical Society of London will be given on Monday, May 13th, by Sir William Willcox, who has chosen as his subject, "Toxic Drugs," Their Use and Misuse.

An advertisement for an Assistant Medical Secretary to the British Medical Association appears in our advertisement pages this week, and further reference to the matter will be found in a Current Note in the *Supplement*, at page 199.

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

THE TREATMENT OF RHEUMATIC CARDITIS

BY

THOMAS F. COTTON, M.D., C.M., F.R.C.P.

Rheumatic carditis, as the name implies, is a distinct disease with a group of symptoms and a common morbid lesion. The morbid anatomists have accurately described the changes in the tissues, and clinicians have observed symptoms and signs which can be correlated with disturbed function and a common underlying pathological process. It is generally believed that the cause of the disease is a bacterial invasion of the blood stream, and the organism is probably a streptococcus. The phenomena which characterize a rheumatic infection are polyarthritis, chorea, subcutaneous nodules, and carditis, and of these the cardiac lesion is the most important, for upon it depends the life of the patient. The whole heart is involved in an inflammatory reaction, with a productive proliferation of the tissues and the submiliary nodule as an essential feature. It is a disease of childhood and adolescence ; in three-quarters of the cases of rheumatic heart disease the damage occurs between the ages of 5 and 15, and among school children it is a disease of the first magnitude.

Aetiological Factors

The problem that has to be faced in the treatment of carditis is that of juvenile rheumatism. If the factors governing the incidence of rheumatism could be controlled, heart disease in children and young adults would occupy a small place in the practice of medicine. Cardiac rheumatism is undoubtedly influenced by such environmental conditions as poverty, climate, and exposure. Urbanization plays a part in the aetiology ; heredity and diathesis do not seem to be predisposing causes of the disease. There is reliable evidence that tonsillar sepsis and scarlet fever can be definitely linked with a rheumatic infection. An inquiry into the cause and course of juvenile rheumatism reveals the fact that whatever may be the particular conditions that influence this infection, the incidence of rheumatism in childhood remains high, in spite of all measures of prevention employed to protect the child. To make the child less vulnerable from attack is one way of grappling with the problem of treating the disease. No special method is available for this purpose: it is a social question, which to some extent has been answered in the homes of the well-to-do classes. Ill-health and early disease are more likely to be recognized and treated in these families than in those of the hospital class. Tonsillitis, growing pains, the nervous twitching of chorea, are manifestations of a rheumatic infection, and if untreated may be, and often are, the cause of a serious cardiac lesion. It is not surprising that the varied manifestations of rheumatism should not be recognized: an unexplained pyrexia with the associated debility syndrome, or well-advanced signs of carditis, may be the only record we possess of a past rheumatic infection. The diagnosis of carditis is an admission that a rheumatic invasion of the body has not been recognized, or that remedial measures have failed to control the infective processes of the disease.

General Principles of Treatment

Since carditis is a manifestation of acute or subacute inflammation, the basis of treatment, like that of other types of inflammation, is rest, which should be for as long a period as there are symptoms or signs of active infection. The pulse rate, temperature, and body weight are reliable signs of the presence or absence of a toxic state. One can from the charted temperature, pulse rate, and body weight, without any special reference to the heart signs, determine the length of rest required. A resting pulse rate of 100 and a sleeping rate of 90 are levels which serve as a guide to the presence of active carditis. A temperature which rises to 99.6° F. can be accepted as evidence of active infection. A resting pulse rate of 100 combined with a temperature of 99.6° F. in a rheumatic subject with signs of a valve defect or cardiac enlargement, when other infections can be excluded, is conclusive proof of active carditis. A temperature of 99° F., with a pulse rate of 80, may have to be disregarded as evidence of active infection. Charts A and B are an indication for rest ; Chart C is in this respect of doubtful value.

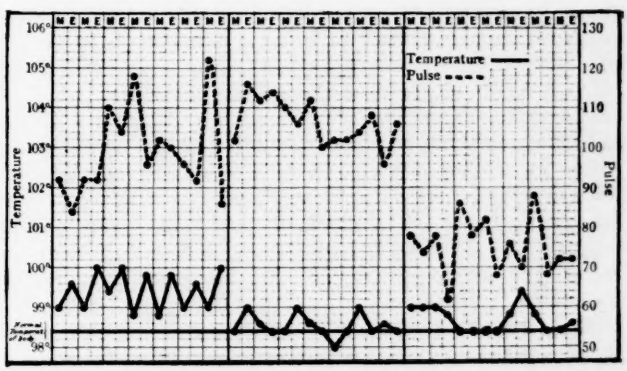

Chart A. Chart B. Chart C.

Painful and swollen joints are signs of an active infection. Rest is obligatory, and the joints should be covered with cotton-wool. Arthritic symptoms may be absent in the subacute and chronic phases of the infection. Rest is always necessary if there are rheumatic nodules ; they may persist for months, and should never be neglected as a sign of active infection. Sweating is common when the temperature rises above 100° F. ; these patients should have bedclothes made of flannel or wool.

Treatment of Chorea

Chorea, a manifestation of acute rheumatism, runs an average course of six weeks, but occasionally lasts ten weeks. The essentials in the treatment of chorea are rest, quiet, and good nursing. Rest in bed is unnecessary for a longer period than six weeks if other signs of infection are absent. The child should be isolated from other members of the family, and in the wards of a hospital be segregated from the other children. It is a common practice to prescribe salicylates in small doses—10 grains of sodium salicylate with an equal amount of sodium bicarbonate three times a day. Some physicians are of the opinion that aspirin, or calcium aspirin, is more easily tolerated, and recommend that it should be taken in doses of

5 grains three times a day. It is doubtful if salicylates have any real value in influencing the course of the malady. Pyramidon may be recommended as a useful sedative, but not in the large doses formerly prescribed. It is customary to give this drug in pill or cachet form, 5 grains three times daily. Luminal, 1/2 grain three times a day, is probably equally effective in controlling the muscular twitching of chorea. Chloral hydrate, 5 grains, and sodium bromide, 10 grains, in a mixture three times daily, is regarded by some authorities as more efficacious than pyramidon or luminal. There are some who are content with rest and quiet and no drugs. They maintain that chorea may run a course of six weeks whatever drugs are prescribed ; that salicylates are without effect in preventing the insidious onset of carditis, which develops when the patient has recovered from the acute illness. As in other forms of rheumatism, the rest must be continued throughout the period of active infection as determined by the pulse rate, temperature, and body weight. A leucocyte count above 9,000 cells per c.mm. and a blood sedimentation rate above 10–20 (Westergren method) are signs of active infection, which are considered of value in distinguishing between the active and quiescent periods of the infection.

Rheumatic Fever

In the initial attack of rheumatic fever, and in the acute phases of a recurring infection, when the heart is likely to be involved in an inflammatory process, salicylates in heavy doses should be prescribed up to the point of saturation. It is usual to give sodium salicylate with an equal quantity of sodium bicarbonate in divided doses up to 100 grains a day for a child, and 200 grains for an adult, for a few days. The dose may then be reduced to 10 grains for a child and 20 grains for an adult, three times a day, and continued as a maintenance dose for a few weeks. If salicylates are administered over a longer period the dose should be reduced to 5 to 10 grains daily for a child or 10 to 30 grains for an adult. These patients should be kept in bed for a month after the acute phase of the infection has become quiescent.

The treatment of a child convalescent from the acute infection should be for a minimum period of six months. A fifth of these cases will have a recrudescence of the infection, usually of the subacute type, within a few months of recovery from an attack of acute rheumatic fever. A rise of the pulse rate above 100, and of the temperature over 99° F., as evidence of active infection, are indications for rest in bed, which should be continued for one or two weeks after the temperature has fallen to 99° F. and the pulse rate is under 100. Salicylates do not seem to influence the pulse rate or the temperature (if it does not rise above 100° F.) at this stage of the illness. There is no progressive increase in the size of the heart, and the murmurs remain the same in a large proportion of cases: it is not safe to rely upon heart signs alone in diagnosing a recrudescence of the infection. Signs of pericarditis are of course evidence of active infection ; they rarely occur without other symptoms and signs of a toxic state. A recurring infection is more frequently observed in aortic incompetence or mitral stenosis than in early mitral disease with a mitral systolic murmur only. In a large number of children with mitral stenosis or aortic incompetence it does not seem possible to arrest the progress of the infection by rest, or by the shortening of school hours, or by restricting their games. In the less advanced cases—the mitral systolic group—remedial measures may prevent the development of a serious cardiac lesion.

Convalescent Care

The future welfare of the child who has recovered from an acute rheumatic infection is closely linked with treatment during the period of convalescence. There are special convalescent homes which are well equipped for the treatment of these children, where they may be kept under observation with carefully controlled conditions until they are able to resume their normal activities. On the basis of recorded experience in one of these homes, convalescent treatment for a period of four and a half months is not long enough to influence the natural course of the disease. The time has therefore been lengthened to six months before they are allowed to return to their homes. After-history records in a series of cases have demonstrated that special convalescent treatment does not prolong life in advanced cases. This statement is based on a study of the after-histories of 100 boys, with an average age of 11 years, over a period of ten years. The results of treatment are displayed in the following table.

Disease	Total	Living	Dead	Untraced
Mitral disease. Systolic murmur	57	36 (63%)	18 (32%)	3
Mitral stenosis	23	8 (35%)	14 (61%)	1
Aortic regurgitation. Mitral stenosis	14	7 (50%)	6 (43%)	1
Aortic regurgitation (4). No valve disease (2)...	6	3 (50%)	2 (33%)	1
Total	100	54%	40%	6

All with symptoms or signs of acute infection were rested in bed. During the quiescent stage, if there was no complaint of breathlessness, undue exhaustion, fatigue at rest or after running about the house or grounds, they were allowed to play games. Games such as rounders and cricket were played by those with a good exercise tolerance ; others with a poor response to exercise played less strenuous games. The matron's report on the reaction to exercise was helpful in deciding what games should be played. The school hours were so regulated that lessons could be discontinued or restricted when signs of active infection were present, or symptoms of exhaustion were easily provoked by exercise. The good results of special convalescent treatment will be manifest when admissions are restricted to early cases before the development of mitral stenosis, aortic incompetence, or much enlargement of the heart.

A resting pulse rate of 100 and a pyrexia of 99° to 99.6° F. in convalescent cases do not seem to be influenced by salicylates ; nor is digitalis effective in slowing the pulse rate of the patient with a persistent tachycardia. General tonics may be prescribed ; iron is indicated in those with anaemia (Blaud's pills, two to four three times a day). Good food with plenty of butter and milk, healthy surroundings with sunshine, and a warm climate have been found to be more important than drugs in the treatment of this disease.

The failure of the rheumatic heart to maintain the circulation is a complication which may not develop until adult life, and the treatment is that of heart failure of the congestive type. The rheumatic infection is the chief cause, although other infections are often a contributory factor. The treatment of these cases is like that of heart failure due to other causes.

Tonsillectomy

One cannot be indifferent to the view that tonsillectomy should be advised as a routine remedial measure in the treatment of juvenile rheumatism. It is generally agreed

that this operation is indicated when the tonsils are septic; there is a divergence of opinion regarding the removal of healthy tonsils as an aid in preventing the recurrence of the infection and arresting inflammatory changes in the heart muscle. A good deal of evidence has been advanced in favour of restricting the field of operation to the removal of unhealthy tonsils. When possible the operation should be done during the quiescent stage of the infection. The risk of damage to the heart incurred by a recrudescence of the infection from tonsillectomy is less than the danger of active infection from uncontrolled tonsillar sepsis.

France

[FROM OUR CORRESPONDENT IN PARIS]

Death of Dr. Champetier de Ribes

The late Dr. Camille-Louis-Antoine Champetier de Ribes was born at Draveil (Seine-et-Oise) on June 3rd, 1848. In December, 1874, he was elected to an internship in one of the Parisian hospitals. A pupil of Tarnier, he specialized early in obstetrics, and it was in this discipline that he read his thesis for the degree of doctor, on "Le Passage de la Tête Foetale Dernière à travers les Bassins Rétrécis." This thesis, published in 1879, had a revolutionary effect on that aspect of obstetrics with which it dealt, and the movements he described for the delivery of the head through the contracted pelvis came to be known as the "Manœuvres de Champetier de Ribes." The bag which he devised for the dilatation of the cervix bore his name and is still employed with success in certain quarters. He was the obstetrician-in-charge of the Hôtel-Dieu from 1897 till his retirement at the age limit in 1911. After the Great War he retired to the country, ending his life peacefully there, where he had begun it.

The New Beaujon Hospital

The old Beaujon was all a hospital should not be; the new Beaujon is the quintessence of all the sanitary and architectural virtues. Started in January, 1932, this 1,100-bed hospital has taken over three years to build, and although patients already receive treatment there, it will be some time before the finishing touches are complete. The cost has been over 106 million francs—not that this says much in this age of fluctuating exchanges and money values. The architect, Jean Walther, is responsible for this first attempt at a French skyscraper hospital which will henceforth be a landmark competing with the Eiffel Tower and the Arc de Triomphe. The architectural conventions are largely those of the modern American hospital, but M. Walther has not hesitated to put Gallic touches here and there when he has been confronted by the products of Anglo-Saxon mental rigidity.

Anti-foreign Demonstrations by Medical Students

The rioting early this year in the Latin Quarter has recently been resumed by French medical students, irritated by the invasion and competition of foreigners. It was thought that the assurances given earlier this year as to the rationing of foreign invaders had not been implemented. It would be easy, but hardly fair, to dismiss all this clamour as the natural craving of the newborn for respiratory exercises. There are probably few countries, if any, in the world in which the proportion of foreigners among medical practitioners is as high as 10 per cent. French scientific hospitality has been abused, particularly by the Rumanians. Since the war there has been a considerable influx of Russians, and of late there have been many German newcomers. French doctors would not mind if the foreigner studied medicine in France as long as he did not practise it there. But one cannot expect the medical student, who is jostled at the bedside and in the laboratories, to be altruistic enough to share this opinion.

Scarcity of Doctors in Rural Areas

The French authorities are promoting what may be termed a back-to-the-land movement for young doctors by putting at their service an information bureau which, under the Department of Public Health, collects and distributes information about openings for doctors, dentists, and chemists in villages and rural areas. This problem is one with which every country has to deal, but it is not every country which has set out to solve it so methodically as France has. The hard work and poor pay of a rural practice are likely to prove less inhibitory now that, with the overcrowding in the medical profession, many doctors can no longer make a living in the towns.

Health of the School Child

An important series of conferences, held in Paris on April 4th, 5th, and 6th, under the title of Journées Medico-Sociales de l'Enfance d'Âge Scolaire, have enabled doctors and teachers to pool their experience and see how, by co-operation, the school child may still become erudite and yet remain healthy. The subjects under discussion were: medical school inspection, physical education and open-air activities, mental hygiene, and social service for children and adolescents. The inaugural meeting was presided over by the Minister of Public Health, and the last plenary session by the Minister of National Education. It has been felt for many years that the French school curriculum has been overloaded, and that the teachers have been more keen on filling their pupils' brains with examination data than their veins with good red blood corpuscles. An increase in the number and quality of the latter is to be confidently hoped for as one of the most important results of this meeting.

Conference on Undulant Fever

The first Brucellosis Congress will be held in Avignon in June. It is, of course, impossible to say how much the rapidly growing number of recognized cases of undulant fever reflects increased knowledge of this disease and how much it is actually progressing. In 1925 only seventeen departments were involved; their number has now risen to fifty-seven. It was calculated in 1932 that about 3,000 cases occur annually. According to Dr. Louis Martin of the Pasteur Institute, infection with the cheese and milk of goats and sheep is responsible for only a small proportion of all the cases. Cattle breeders of the South of France are, however, very subject to undulant fever. The research institute, established in 1930 at Montpellier under the auspices of the Rockefeller Foundation and the Bouisson-Bertrand Institute, has already contributed useful information on this subject, and has shown how much can be effected by the sterilization of suspect milk at the source and how little there is at present to be hoped from preventive inoculation.

A medical expedition under the direction of Dr. Strong, professor of tropical medicine, has recently returned to the Harvard Medical School, Boston, from the Belgian Congo, where it had been studying onchocerciasis. Villages had been found where 90 per cent. of the inhabitants were attacked, and many of these were completely blind.

Scotland

Training of Nurses

The Scottish Committee of the British Medical Association, in giving evidence before the Departmental Committee on the Training of Nurses, outlined a scheme for a comprehensive training in general nursing completed in five years. The following is a résumé of the committee's suggestions. The curriculum for nurses should be reorganized to provide within a reasonable period an adequate training in all the main branches of nursing, and every nurse should, in the first place, be obliged to take this general training, after which she might proceed to a post-registration course on mental nursing, fever nursing, etc., if she desired to specialize. The services of the nursing profession should be available to everyone, and it might prove advantageous to include them in the benefits obtainable under the national health insurance system. At present there was an insufficient reserve of trained nurses, and the units of organization for supplying nurses for domiciliary work were incoordinated, too numerous, and too small. It would effect efficiency and economy if the organization of the nursing service of Scotland was placed on a regional basis corresponding to the five suggested hospital regions: northern (based on Inverness), north-eastern (Aberdeen), eastern (Dundee), south-eastern (Edinburgh), and western (Glasgow). It would be well if all services dealing with the health of the community, including nursing, were removed from county councils as at present constituted and placed under the administration of five wider committees representative of the local authorities in these various regions. At present no single type of hospital could offer the all-round training which a complete nursing service demanded, and this difficulty had been aggravated by the increasing number of special hospitals. The co-ordination of the entire hospital services of the country, preferably on a regional basis, would be necessary if a comprehensive scheme was to be secured, and the co-operation between the various hospitals in a region should be such that a nurse during her period of training would be able to pass from one to another, and thus make her training and experience as complete as possible. Such a scheme would facilitate the establishment of a standard of remuneration for nurses and the institution of a comprehensive pension scheme. The course of training proposed by the committee was that pupils, after passing a preliminary examination in general knowledge equivalent to the day school leaving certificate, should for one year attend approved courses in anatomy, physiology, hygiene, dietetics, elementary bacteriology, elementary psychology, and possibly cultural elements, and should pass the part of the Nursing Council's first examination in these subjects before they began practical work in the wards. In the probationary year of hospital work general medical, general surgical, and children's wards might be used to teach the pupil the facts and manipulations which were common to all nursing, and at the end of this year the present first examination of the General Nursing Council might be completed by examination in nursing Part I. In the second year of hospital, senior clinical work in the general wards and in fevers, skin diseases, and venereal diseases might be undertaken. Theatre and special departments with gynaecology, eye diseases, ear and throat diseases, and work in the electrical and massage departments might be taken in the third year, while in the fourth courses in maternity nursing and mental nursing should be provided prior to the final State examination for general nursing. For those who elected to pursue special types of nursing, courses of post-registration experience would be necessary.

Medical Superintendent of Aberdeen Royal Infirmary

The board of directors of Aberdeen Royal Infirmary has appointed Dr. John C. Knox of Leeds to be medical superintendent. Dr. Knox took his medical course at Glasgow University, where he graduated B.Sc. in 1913 and M.B., Ch.B., with commendation, in 1915. He took the D.P.H. at Leeds in 1933. From 1915 to 1919 he acted as a temporary captain in the R.A.M.C. For a number of years he has been demonstrator in the department of pathology and bacteriology and research assistant in the department of experimental pathology and cancer research at the University of Leeds.

Deaconess Hospital, Edinburgh

At the annual meeting of the Church of Scotland Deaconess Hospital, Mr. J. A. S. Millar, chairman of the board, who presided, said that the number of patients admitted during the year had been 950 as compared with 861 in 1933, while the total under treatment had been 986 and the average stay in hospital 13.08 days. The number of surgical operations had been 546 as against 470 in 1933, and the mortality rate 3.14 per cent. The ordinary income, including that from investments, had been £6,200, and the ordinary expenditure £5,747, leaving a surplus of £452. Of this balance £400 was transferred to the extension fund, for which £38,000 was required. The managers proposed in this extension, which would involve complete reconstruction of the existing hospital, to provide fully equipped surgical and *x*-ray departments, an extension of the nurses' home, and an enlarged ward for children and an out-patient department.

England and Wales

Conference on Child Care

A National Conference on Maternity and Child Welfare under the patronage of the King and Queen, will be held at the London County Hall, Westminster Bridge, S.E., and subsequently in Queen Mary Hall, Great Russell Street, W.C., on Monday, Tuesday, and Wednesday, July 1st, 2nd, and 3rd, under the presidency of the Minister of Health, Sir Hilton Young. The conference has been organized on behalf of the National Council for Maternity and Child Welfare, and certain of its constituent bodies, by the National Association for the Prevention of Infant Mortality, in co-operation with the Maternity and Child Welfare Groups of the Society of Medical Officers of Health, which will also hold a short clinical course for medical practitioners on June 29th and 30th. The subject for discussion throughout the conference will be "The Care of the Child from 2 to 5 Years of Age," and the following aspects, among others, will be included: facilities for convalescent treatment; the importance of co-operation between general and cottage hospitals, infant welfare centres, and orthopaedic clinics in the early discovery and treatment of physical defects; mental health; the care of the child during the pre-school period as reflected in the findings at the first routine school medical inspection. The conference is open to all who are interested in maternity and child welfare; the fees for full membership, including the receipt of all printed matter, are £1 1s. per member, or in the case of two, or of three, members representing the same local authority or voluntary organizations 15s. and 14s. each respectively. Applications for tickets, with remittances, should be sent to Miss Halford, honorary secretary, National Association for the Prevention of Infant Mortality, 117, Piccadilly, W.1.

Central Midwives Board

At the April meeting of the Central Midwives Board for England and Wales Dr. J. S. Fairbairn was re-elected chairman. The following members of the Board were appointed to the Approvals and Examinations Subcommittee: Sir Comyns Berkeley, Dr. J. S. Fairbairn (*ex officio*), Dr. W. Allen Daley, Miss E. E. Greaves, Miss A. Davies, Miss A. A. Pollard, Miss E. M. Doubleday, Mrs. Elena Richmond. The Finance and Penal Cases Committee were also elected. It was announced that the Ministry of Health had reappointed as representatives on the Board Dr. Fairbairn, Miss Doubleday, and Miss Pollard, and that the Society of Apothecaries had appointed Dr. M. Milton Townsend. A letter had been received from the Ministry of Health approving the existing rules of the Board for a further six months from March 31st, 1935. The following resolution had been forwarded by the secretary of the National Council for Equal Citizenship: "This council urges that the period of training for midwives should be lengthened; further, that in view of the present reduced number of births, the regulations should be modified so that practical work at births should be reserved for those who wish actually to practise midwifery." The Board agreed to reply that the points contained in the resolution were already receiving careful consideration. The revised lists of examiners, lecturers, and institutions where lectures may be delivered, and institutions, homes, and midwives at which and under whom pupil midwives may be trained (the latter subject to satisfactory arrangements on certain points being made), were approved for the year ending March 31st, 1936.

Town Planning

The Minister of Health has issued a set of model clauses for the guidance of local authorities preparing schemes under the Town and Country Planning Act, 1932. These are based on provisional clauses prepared by the Department and revised in the light of recommendations made by the Advisory Committee on Town and Country Planning appointed by the Minister. Town planning powers were substantially altered and enlarged by the Town and Country Planning Act, 1932, and the clauses provide the means for enabling local authorities to take effective action under that Act. Provisions are now included which have for their object the fuller preservation of amenities, the improvement of traffic conditions, and the prevention of danger or injury to health by the premature development of land not equipped with the necessary public services. The initial steps for the preparation of town plans have already been taken by 847 local authorities, 707 of whom are to a greater or less extent taking joint action through the medium of 148 regional committees. Copies of the clauses, with notes, may be purchased (2s.) from H.M. Stationery Office, or through any bookseller.

The London Foot Hospital

Lord Dawson of Penn presented the prizes at the annual gathering, on April 16th, of the London Foot Hospital School of Chiropody. The school, which was founded in 1923, has at present about ninety patients, and deals with some 40,000 cases a year. Lord Dawson described the work of the institution as a model craft, which required accurate knowledge as well as the dexterity which came of careful training. The public service rendered by the members of the school also partook of the nature of an art, and was of great practical value, for it was now generally recognized how much the feet were concerned in the maintenance of the general health and comfort. There was, moreover, another service rendered to the community, for the worker who suffered pain whenever he set foot on the ground could not but be seriously hindered in his work; his outlook on life was warped, and the consequences might even be felt acutely in his own home. Lord Dawson praised the organization of both the foot hospital and its school; those who were responsible for their functioning carried on the work with independence and yet in close co-ordination with the medical profession. He welcomed this happy co-operation, because such great benefit to the general public resulted from it. Another useful art and craft was manipulative surgery, and its application to some foot maladies would be a useful adjunct to chiropody. All arts and crafts which were ancillary to medicine were to be welcomed, each in its own sphere, provided they were founded on scientific fact and good training, and were free from fancy and false pretensions.

India

Child Blindness in India

The Elizabeth Matthai Lectures, Madras University, by Lieut.-Colonel R. E. Wright, on "The Chief Preventable Blinding Diseases of Childhood,"[1] show well the differences in the conditions of East and West. Keratomalacia is almost certainly the chief cause of blindness in children in India. It is very rare in Europe. The signs observed in human beings suffering from the disease are similar to those artificially produced in animals by withholding vitamin A from the diet. The symptoms of the disease have been known for thousands of years. The fact that liver was used successfully in treating night-blindness (one of the characteristic symptoms of the disease) in ancient Greece, and as far as Japan, makes it likely that this treatment was for the night-blindness or avitaminosis. The lecturer said they had not found anything so efficient as crude cod-liver oil; as small a daily dose as 7.5 minims in an emulsion was effective in infants. Irradiated ergosterol, fresh liver, or liver powder did not give better results. He concluded that vitamin A alone is not so effective in the treatment of the conditions as when supplied in conjunction with other vitamins in the form of crude cod-liver oil. The disease is due to economic conditions. It will gradually become eliminated as better conditions of life become established.

Trachoma takes a heavy toll of sight. It is associated with overcrowding, indoor living, dark, confined, unventilated housing, and the purdah rather than with poverty *per se*. It is more frequent in urban than in rural populations. It is not necessarily a disease of hot countries; it is about as common in the cold, wet, dark slums of Dublin as in hot, humid, poverty-stricken areas of Madras. It appears to be more common in Indian groups who habitually drape the head and face with clothing. Where there is no real cold season the disease is not prevalent. In such places the poor are of cleaner habits; they go practically naked, and lose no opportunity of washing. It is a disease of the great unwashed, who fug in frowsy, overcrowded dwellings. The position with regard to trachoma is very unsatisfactory. The diagnosis is uncertain and the statistics inaccurate, but nevertheless it appears to be one of the most serious menaces to adult sight in certain areas, notably the Punjab and the United Provinces. Its eradication largely depends on the general care of the public health. Venereal disease, which takes such a high toll of sight in the West, is much less damaging in the East. Ophthalmia

[1] *Journal of the Madras University.*

neonatorum, Colonel Wright says, is certainly not the greatest cause of preventable blindness even in children in India. He thinks there are reasons for holding that the strain of the gonococcus is not so virulent as that which is responsible for the disease in England. In a special research the organism was found in a large number of babies' eyes without the corresponding clinical appearances. So with interstitial keratitis due to congenital syphilis. It is by no means the greatest cause of preventable blindness. Small-pox, rare as a cause of blindness in England, is a common cause in India. This appears to be due to laxity in the administration of the vaccination laws. A proportion of from 36 to 47 per cent. of surviving children at 1 year escape vaccination.

There is a cause of blindness in children almost peculiar to the East, and particularly common in India—the use of irritants on the eyes. Not only do village quacks and old women treat all manner of simple eye disease by inserting violent irritants into the eyes, but they even treat fits and various forms of unconsciousness in children by this means, with the idea of directly stimulating the brain: tobacco juice, red-hot coals, alum, chillies, urine, dung, and so on. One investigator listed no fewer than 144 types of irritants in use. Efforts are being made to dispel this ignorance by lectures and the like. Amongst hereditary disease retinitis pigmentosa headed the list. The great majority of cases show very defective vision comparatively early, though complete blindness may be delayed. The commonest form shows migration of pigment towards the periphery of the retina, but the pigment is not distributed in the bone corpuscle pattern so frequently seen in European countries; it is more irregular and patchy. It is frequently associated with consanguineous marriages.

Epidemic Dispensaries in the Central Provinces

Although 1933 was the healthiest year on the whole for three decades in the Central Provinces and Berar, there was still much activity as regards the treatment and prevention of various epidemics, and the annual report of the medical administration and public health department contains some interesting details. Thanks to the readiness with which the native inhabitants now take to evacuation and inoculation, and to the rat destruction campaigns in municipal areas, plague has steadily declined in the province. The district of Chhindwara has, however, steadily headed the list as regards plague mortality since 1930, and the conditions there seem to call for special investigation. In spite of the restrictions on the work of epidemic dispensaries rendered necessary by financial difficulties, there was no falling off in the ordinary work of general health propaganda and treatment of patients in villages and large fairs. There are thirty-three of these dispensaries, which move about from district to district as required by the exigencies of epidemics, and have proved of immense value in checking plague and cholera. During 1933 the assistant medical officers in charge visited nearly 5,000 villages, treated over 80,000 patients, and delivered more than 9,000 lectures on health subjects. The commonest diseases treated were malaria, respiratory and digestive disorders, and skin and eye troubles. Inoculations against cholera numbered 45,906, and against plague 24,140. These tours only covered two weeks in a month. During the remainder of the month, while the medical officers were at headquarters, they were given the work of health propaganda, inoculation of pilgrims against cholera, checking vital statistical information by house-to-house visitation, medical inspection of schools, and examination of villages within five miles from headquarters.

Reports of Societies

SEQUELS OF INJECTION ANAESTHESIA IN THE MOUTH

At the meeting of the Section of Odontology of the Royal Society of Medicine on April 15th, with Mr. FRANK COLEMAN presiding, a paper was read by Mr. HAROLD ROUND of Birmingham, with whom Dr. H. J. R. KIRKPATRICK was associated, on "Sequelae following Injection Anaesthesia in the Mouth—a Bacteriological Investigation."

Mr. Round said that these sequelae did occur. They varied very much in severity, sometimes amounting only to pain and swelling or a subsequent neuralgia, but occasionally there was sloughing of the soft tissues, osteitis, necrosis, even osteomyelitis. On one occasion, when three separate injections were made in the mouth, there afterwards appeared large chronic tuberculous ulcerations in each area. The investigation under discussion, dealing chiefly with infiltration anaesthesia, had arisen out of the rather frequent call during the last year or two to treat these more or less serious conditions in hospital. He did not wish to be dogmatic or necessarily to condemn local anaesthesia. Sequelae of this kind occurred after other anaesthetics, but not with anything like the same frequency.

The factors to be considered in a study of the causation of sepsis were mainly three: (1) faulty technique, including inadequate sterilization of instruments and of the surface area into which the anaesthetic fluid was injected; (2) the presence in the depth of the tissues of micro-organisms which assumed invasive characters as a result of depriving the tissues of their blood supply owing to vaso-constriction caused by adrenaline in the anaesthetic fluid, or devitalization of the tissues resulting from surgical trauma and tension; and (3) invasion of devitalized tissues by micro-organisms from the surface, following surgical procedures. He confined himself to two aspects of the problem—namely, asepsis in the area of injection, and the possible presence of micro-organisms in the submucous and deeper tissues. Most of the patients were extraction cases; some had healthy, others definitely septic, mouths. A technique was evolved, which he described in detail, to give information as to any improvement in asepsis to be gained by protecting the injection area from bacterial contamination in the interval between sterilizing the area and injecting the anaesthetic fluid, and also as to whether micro-organisms were present in the depth of the tissues. Only organisms growing under aerobic conditions on blood agar or in hormone broth were studied.

The injection syringe and needle were sterilized, the injection area was swabbed, and the swab immediately rubbed over the surface of blood agar; the injection fluid was then drawn up into the syringe and two inoculations into broth carried out to control the sterility of needle and fluid. The syringe needle was immersed in a tube of broth medium, and a few drops of injection fluid injected into a second tube. The syringe needle was held in the patient's mouth for one minute and then immersed in a third tube of medium. This culture controlled infection of the needle by droplet contamination from the patient's mouth for the average time required to carry out an injection. The injection area was sterilized with a 2½ per cent. solution of iodine in spirit, and a swab taken of the sterilized area was inoculated in a fourth tube of broth. The injection was then made, and immediately the needle was immersed in a fifth tube. The blood-agar plate receiving the inoculum from the first swab was incubated for twenty-four hours and the type of growth recorded. The type of growth present in a positive broth culture was determined by plating out on a suitable medium and supplying appropriate tests for the identification of the organisms. The most numerous of the organisms grown from the first swab was *S. viridans*; haemolytic streptococci were frequently present, and were grown in considerable numbers from many of the cases. *M. pharyngis flavus* was present in all cultures; staphylococci and pneumococci were rarely grown.

In the first group of twenty-five cases the injection area was sterilized with iodine solution, and no special precautions were taken to protect the area subsequently from adjacent structures; in a second group of thirty-four cases the injection

area after sterilization was protected from contact with adjacent structures by pads of sterile gauze wrung out in iodine solution. Organisms were grown from the injection area after sterilization in 20 per cent. of the first group of cases, but in only 6.6 per cent. of the second group; in most cases the positive culture was pure *S. viridans*. This indicated that special protection of the sterilized injection area from bacterial contamination was necessary in any satisfactory asepsis technique.

In discussing the presence of organisms in the depth of the tissues, Mr. Round said that in the experiments recorded the bacteriological results could be classified into (1) negative, where there was growth in the culture of the first swab and no other culture after at least three days' incubation, and (2) positive, when there was growth, in the first and last cultures only, within a period of three days' incubation. When a positive result was obtained the broth culture was plated out and the organisms identified. In thirty such experiments positive cultures were obtained from the depth of the tissues in eight cases—in five a pure growth of *S. viridans*, in two a pure growth of *S. aureus*, and in the other a growth of *S. viridans* and *M. pharyngis flavus*. In all except the two cases in which *S. aureus* was grown organisms of the same type were present as part of the flora of the surface tissues.

The present investigation would be continued to include 100 or more cases, different kinds of antiseptics would be tried, and it would be arranged for every patient to report on the day following treatment, and perhaps at subsequent intervals, when the technique would be followed again in order to gain information on two points—namely, whether invasion of devitalized tissue commonly occurred after extraction following injection anaesthesia, and the significance of different types of organisms in the causation of "clinical" infection. In the series so far recorded the only case showing clinical infection gave a positive result with *S. aureus* at the time of extraction, and since all the other positive results gave a culture of *S. viridans* from the needle, it would be interesting to know what was the significance of this organism in dental sepsis.

Dr. H. J. R. KIRKPATRICK added that he considered the significance of *S. viridans* well worth investigating, both in connexion with the problem of dental sepsis and from the point of view of general medicine. One had only to consider the importance of this organism in subacute bacterial endocarditis and as an aetiological factor in cholecystitis to realize that its presence in tissues was probably a very significant point to be investigated.

Dr. E. W. FISH said that it was sometimes overlooked that casual infection occurred in the submucous tissues, and in the bones of the jaw and the pulp of the teeth, which arose originally from the gum margin. There was an ebb-and-flow movement in the lymphatics, and as in most people there was a mass of infection on the gum margin, a certain number of organisms found their way into the lymphatics which drained that area. If the flow in the lymphatics was reversed they might be carried back into the pulp or into the surrounding bone, with the result that if a perfectly normal pulp or piece of bone were cultivated an organism might be found. Thus the possibility of a casual infection being spread by an injection was quite a definite one. If the injection was into an area which happened to have a number of organisms in it, and these were intercepted by the local anaesthetic and caused to "hang fire," even for a short time, they might become implanted in the walls of the lymphatics and the surrounding tissues. Thus there was a good deal of interest and importance in this investigation.

Mr. ROUND, in reply to other criticisms and comments, said that he was not trying to be dogmatic. These cases were encountered at hospital, and he was not saying that they were due to the local anaesthetic or the extraction, or particularly to the condition of the patient himself; but in Birmingham, at any rate, they were found so frequently as compared with cases following other anaesthetics that there seemed to be ground for making an investigation. It was not a question of the particular kind of anaesthetic used—as a matter of fact, in all these cases the anaesthetic was 2 per cent. novocain—but of the sterility of the anaesthetic.

SURGICAL ACCIDENTS

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, held on March 29th, with the president, Mr. SETON PRINGLE, in the chair, Mr. SEYMOUR HEATLEY showed radiograms of a case in which he had removed several fragments of silver wire from the interior of the knee-joint.

The patient had sustained a fractured patella two years previously, which had been wired in another country. Sound union in good position had resulted, but sudden severe pain in the joint, with effusion, had recently developed. *X*-ray examination showed that the wire, which had been wrapped round the patella, had broken into six pieces, some of which were lying in the back of the joint. These were removed through a postero-lateral incision, and the patient returned to work in three weeks.

The PRESIDENT said that he did not use wire in these cases. Latterly he had been using sutures of fascia lata, which were very satisfactory. Mr. R. A. STONEY said that he frequently used wire, and in one case had actually inserted five separate wire sutures, and had never seen any ill effects result. Mr. W. PEARSON thought that silver wire was capable of localized adsorption and consequent fragmentation. Mr. F. J. MORRIN said that he personally never used anything but catgut in fractures of the patella. Mr. J. C. FLOOD congratulated Mr. Heatley on his successful operation. He himself usually followed Böhler's technique in these cases.

Mr. R. ATKINSON STONEY described an unusual accident which occurred during phrenic evulsion under local anaesthesia.

Just as the deep fascia covering the scalenus anticus was exposed, the assistant who was using a blunt hook to retract the omohyoid changed it to retract the outer border of the sterno-mastoid, and in doing so perforated the internal jugular vein. The haemorrhage was checked by pressure of the vein forwards against the sterno-mastoid. It was found impossible to catch the torn portion of the vein in forceps, but by including a portion of the sterno-mastoid muscle it was found possible to occlude the vein above and below the injury in large clamps. Then the vein was isolated, a double catgut ligature passed with an aneurysm needle, and tied above and below the tear. The nerve was then found and evulsed in the ordinary way. The fact that the patient was not under a general anaesthetic, and that the incision was a very limited one, made the difficulty of isolating and tying the vein very considerable. In view of such a possibility, it would be advisable to avoid the use of a blunt hook in this operation, as though the operator had a good view of the internal jugular, his assistant (if he stood on the other side of the table) had not, and was liable to overlook the fact that it lay immediately under cover of the posterior border of the sterno-mastoid and was freely exposed to injury. This patient suffered no ill effects and the wound healed normally.

Mr. HEATLEY mentioned the difficulties he had experienced in carrying out phrenicectomy in a patient with extensive cervical adenitis. He used cervical block in preference to local infiltration anaesthesia for this operation.

Mr. F. J. HENRY congratulated Mr. Stoney on the way in which he had extricated himself from an extremely nasty position. The practice of reporting unusual accidents was one which might be followed oftener, with great advantage. In carrying out phrenicectomy he found there were two essentials: first, a good light, an illuminated retractor being an advantage; and, secondly, to be quite sure that the patient's head was in the correct position.

THE INVOLUTING UTERUS

At a meeting of the North of England Obstetrical and Gynaecological Society, held in the University, Manchester, on April 12th, with the president, Mr. A. GOUGH, in the chair, Dr. E. A. GERRARD (Manchester) read a paper on his investigation of the blood vessels of the involuting uterus in the rabbit.

He reviewed the literature from 1849 to the present day on the subject of involution, and pointed out that the blood vessels of the involuting uterus had received little attention, although the musculature and endometrium had aroused considerable interest. Most of the authors had

described fatty degeneration as one of the stages of involution, but the speaker felt that this was probably due to the pathological nature of the material investigated. It appeared from a study of the literature that Goodall stood alone in his contention that new vessels were formed within the old ones. The involution of the muscle cells was in dispute, being described by some authors as occurring by granular atrophy and by others as a fatty degeneration. Dr. Gerrard found that the study of the involution in the human uterus presented difficulties on account of the lack of suitable material, and investigated this question on rabbits that were killed during the involution and superinvolution periods. He illustrated his findings by means of lantern slides and demonstrated conclusively that immediately following delivery the uterus contracted, its muscle fibres became shorter and broader, and the vessels were compressed, their lumina became smaller, and their walls thickened. The muscle fibres were reduced in size by a process of granular atrophy, a considerable amount of its protoplasm being absorbed. No fatty changes could be demonstrated. By the ninth day involution of the uterine musculature was complete. In the arteries, owing to irregular projections into the lumen and organization of the peripheral clots, the intima became thickened and the internal elastic lamina appeared displaced outwards. The internal elastic layer assumed a laminated appearance. With lactation superinvolution occurred, and there was an increased deposition of elastic tissue, particularly evident round the veins. Superinvolution was characterized by delay of the granular atrophy of the fibres, both of the myometrium and the muscular coats of the artery.

Dr. K. V. BAILEY (Manchester) asked whether there was any evidence to show where the elastic tissue originated. Mr. T. N. A. JEFFCOATE (Liverpool) said that it was interesting to note the amounts of elastic tissue that were described to be present in superinvolution and in subinvolution, and asked how Dr. Gerrard had estimated this. He doubted whether there was actually any change in the elastic tissue, and thought that the amount remained constant.

Mr. M. DATNOW (Liverpool) referred to the normal changes that occurred in the rabbit uterus with the advent of pregnancy, and divided them into those which had a constitutional stimulant such as oestrin and progestin and those which were purely of a local nature. He thought that involution was a process of degeneration and absorption. There was a sudden collapse of the whole uterus with interference of its blood supply, which led to degeneration of the tissues of the uterine wall. He also had never seen fatty degeneration during the process of involution. He felt that Goodall's statement should be reviewed in the light of modern knowledge of hormones.

Dr. GERRARD said in reply that he thought that the elastic tissues were derived from connective tissue cells, and examination of the slides left no doubt about there being differences in the amount of elastic tissue in superinvolution and in subinvolution.

CORRESPONDENCE

The number of letters received for publication is so large that we must ask correspondents to make their points briefly and to regard 600 words as the upper limit of length.

The Osteopaths Bill Inquiry

SIR,—The leading article in your issue of April 20th states with welcome precision the differences prevailing as regards permission to practise "the healing art" in the United States and in our own country. Legislation in all the forty-eight States of the Union has this in common, that *every* person who claims to treat disease requires a licence to do so. Licences are issued, it may be objected, upon very inadequate training as compared with that of "orthodox" medical practitioners, but there *is* some control, however imperfect, of the unorthodox practitioner, who has indeed found a happy hunting ground in the United States; a recent (1932) authoritative publication,[1] very much quoted in the evidence given before the Select Committee in the Lords, states that there are 36,000 "cult" healers in the United States, and that the sum of 125 million dollars a year is spent on these practitioners. There can be little doubt that in earlier years the United States countenanced too readily the establishment of "cults," but latterly, and especially in the last twenty-five years, a very obvious tightening up of the requirements for licences has come about, and consequently the osteopathic schools have decreased in number and their enrolment of students has remained practically stationary during the last seven years.

As a result of a still more recent requirement by certain States—and their example is spreading—students of the irregular cults are obliged to pass an examination in common with the orthodox medical students in the "basic sciences"; that is to say, in pre-clinical studies. A similar requirement in the clinical stage of the student's education must logically follow. If this development should become general, as it promises to do, the situation would become greatly clarified. The irregular cults would no longer provide an easy "back-door entrance" to the practice of medicine. The position would then be similar to the position in this country if we obtained legislation which would compel every practitioner of any sort of medicine to take the minimal qualification admitting to registration by the General Medical Council. It is this aspect of the problem that I would like to emphasize, and the American experience should be useful to us.

Your leader seems to suggest that the "reputable osteopaths" should establish an osteopathic school in this country in association with a hospital of reasonable size, and that when they have satisfied some scientific body that they are giving an adequate education there may be a case for further action. With all respect I would deprecate this suggestion. The six osteopathic colleges in the United States at present recognized by the American Osteopathic Association were inspected in 1927 by the Council on Medical Education and Hospitals of the American Medical Association, which has done such admirable work in sifting out the deserving from the undeserving medical schools. The Council reported that "none of the osteopathic schools was able to meet the standards of even Class C medical schools"; that is to say, that the osteopathic schools were below the very low level of even the third-rate American medical schools.

I submit, Sir, that with this example before us no medical encouragement should be given to the foundation at the present time of an osteopathic school in this country, and that the education of the future osteopath should be conducted in our properly accredited medical schools. It is quite impossible to give an equivalent education in either pre-clinical or clinical studies in any schools other than the medical schools, if for no other reason than that these schools, it must not be forgotten, are very heavily subsidized by the State; a moderate estimate would be that 40 per cent. of the cost of medical education is paid by the Exchequer. No unendowed school can give the same facilities. But the medical schools must willingly accept the responsibility of educating students of the irregular cults in those branches of study which must be common to all who

[1] *The Healing Cults.* By Louis S. Reed. University of Chicago Press. 1932.

aspire to the practice of medicine in any of its branches, whether regular or irregular, and the curriculum would doubtless have to be modified in special cases. The training for the future unorthodox practitioner would be conditioned by the claims made for his particular cult. Cults which claim to treat nearly every kind of disease or injury would obviously have to undergo an education commensurate with that of the orthodox medical practitioner. If the osteopaths were wise and limited themselves to the relatively restricted sphere of the British bone-setter, well defined by Sir Herbert Barker as "dealing with injuries, and derangements of the bones, ligaments, and tendons and some acquired deformities"—and the evidence before the Select Committee demonstrated that the practice of osteopathy in this country was in effect restricted to that domain—they might be accorded a shortened period of study with definite relation to their ultimate aim, such as is now accorded to dentists.

I would again submit my plea that the opportunity presented by the admitted necessity for reform of the current medical curriculum should be used to establish a "basic examination" in the pre-clinical and clinical studies (much simpler than the present minimal qualification for registration) which would be required of all who claimed to treat disease. I am greatly encouraged in repeating this suggestion by the masterly address by Sir Thomas Lewis (which incidentally dealt with problems of medical education) published in your issue of March 30th. Sir Thomas clearly envisages, as I also had envisaged two years ago, two classes of students at the medical schools, one class including the man who is destined for practice, the other and much smaller class, the man who undertakes the study of medicine as a science on the same plane as the sciences of anatomy and physiology and pathology. Sir Thomas, in answer to an inquiry from me for an amplification of his views on this matter, has written that he agrees with me as to "the need for a simple basal but adequate examination to qualify men for the register." . . . "The present compromise which attempts to pass practitioner and scientist through the same mill is an unhappy one." . . . "The succouring of the individual sick, and the advance of medical knowledge: both these are noble aims; but they are distinct aims, and while requiring adequate linkage, cannot properly be conducted under one system of management or through one and the same system of education or training."

It is, of course, possible, but I think highly unlikely, that the "osteopathic theory" may not survive its exposure before the Select Committee; in which event this particular cult might disappear. One great advantage which has resulted from the inquiry by the Select Committee is the submission by the spokesmen for the Bill of "The Scientific Case for Osteopathy," which may be regarded as its official presentation. From a careful perusal of the twelve volumes of evidence given before the Select Committee the conclusion emerges that that case rests for practical purposes on the work of one observer, Louisa Burns. Parts of the case were examined and riddled by some of the medical witnesses before the Select Committee. I submit that it would be a useful contribution either to the final elimination of the osteopathic theory, or to its corroboration, if the case thus presented could be impartially studied by a committee of experts, which would include anatomists, physiologists, pathologists, and radiologists. This expert committee might very properly be appointed, as was in fact suggested by the Lords' Committee, by the Medical Research Council, which (like the General Medical Council) acts under the general authority of the Privy Council.—I am, etc.,

House of Commons, April 20th. E. GRAHAM-LITTLE.

Tuberculosis in the Ferret

SIR,—In 1929 Dunkin, Laidlaw, and Griffith[1] described spontaneous tuberculosis in the ferret, which they attributed to the consumption of raw milk containing tubercle bacilli. We have recently encountered this same phenomenon in ferrets, and feel that it is important to bring it again to the notice of research workers. The disease we have seen is curiously insidious, for the spleen of a ferret whose organs show no macroscopic, or easily detectable microscopic, evidence of tuberculosis may produce rapidly fatal infection in a guinea-pig. It is possible that ferrets thus infected may be used in virus research, and may die in a week or two, or be killed, furnishing tissues or material containing much virus, and "sterile" as tested by ordinary methods, yet containing living tubercle bacilli of the bovine type. Pathologists do not need to be reminded of the risk of using such material in immunizing susceptible animals. To avoid this risk one must use ferrets bred under conditions excluding any possibility of infection, and one must control this by guinea-pig inoculation.

We have done no feeding experiment, but ferrets appear to be so susceptible that we suggest that the research worker would be wise to satisfy himself that all milk used has been sterilized.—We are, etc.,

T. DALLING.
R. A. O'BRIEN.

Beckenham, April 18th.

Gastrectomy

SIR,—As a physician interested in the surgery of the stomach I hope I shall be forgiven for joining in a correspondence in which up to now only surgeons have taken part. Everybody agrees that the treatment of ulcer is primarily medical, so that in any discussion on the indications of surgery and the choice of operation the results of medical treatment must first be considered. These can be judged from three points of view. (1) Several general practitioners skilled in the diagnosis of ulcer, who realize the importance of really strict treatment of sufficient duration followed by lifelong adherence to the post-ulcer regime, have told me that this has invariably been successful in their experience; they have had no fatalities, and have not had to send a single case to a surgeon for ten, fifteen, or more years. This is the ideal at which we must all aim. (2) Hospital statistics show medical treatment at its worst, because no case is more uninteresting to all concerned than a patient with a chronic ulcer who is kept in hospital until he is cured. The vast majority are sent out after three or four weeks—long before they are cured. Only exceptional cases admitted under physicians specially interested in the subject are likely to remain in until healing is complete. Most so-called recurrences are not recurrences at all, as the original ulcer has never healed. (3) Physicians specially interested in the treatment of ulcer obtain results intermediate between (1) and (2). The average duration of symptoms in patients sent to New Lodge Clinic with gastric and duodenal ulcer is fifteen and ten years respectively: it is only to be expected that complications requiring operation are sometimes present.

I believe that every case of gastric ulcer, however long the history and whatever its diameter and depth, except the very small proportion which have led to hour-glass stomach or organic pyloric obstruction, heal completely with medical treatment, though exceptionally large ones may require three months or more. On the other hand, about 25 per cent. of duodenal ulcers, for one reason or another, cannot be cured or kept well. Obstruction is not necessarily an indication for operation, as in many

[1] *Journ. Comp. Path. and Ther.*, 1929, xlii, 46.

cases, even with twelve hours' gastric stasis, it is caused by congestion round the ulcer and achalasia or spasm of the sphincter, so that medical treatment, accompanied by evacuation of the stomach every night, often leads to complete recovery.

The more carefully cases are selected for surgery the worse are the results of gastro-jejunostomy, because those which form the large majority of surgical successes would do equally well without operation, whereas the failures of gastro-jejunostomy occur mainly among patients in whom the strictest and most prolonged medical treatment and after-care would fail. It was the realization of this—that too large a proportion of the comparatively small number of my patients with duodenal ulcer who required operation did badly with gastro-jejunostomy—and the experience of having in New Lodge Clinic since 1921 about 150 private patients suffering from the ill results of the operation (compared with 350 duodenal and ninety gastric ulcers) that made me welcome an alternative operation when I heard of the remarkably successful results of partial gastrectomy from Finsterer in Vienna, von Bergmann—a physician—in Berlin, and Crohn—another physician—in New York. For the last five years I have sent all my cases requiring operation to surgeons like Mr. Ogilvie, who were willing to perform a gastrectomy unless organic obstruction of the pylorus or duodenum called for gastro-jejunostomy. In my experience the operation has had a mortality no larger than that of gastro-jejunostomy. Though the skill of my surgical colleagues has of course been the main cause for the good results, immediate and remote, I think that our joint belief that an operation should be regarded as nothing more than an incident in medical treatment has played an important part, as every patient has had at least a fortnight of strict medical treatment first, so that no one has undergone an operation when his ulcer was acutely inflamed or his haemoglobin was less than 80 per cent. Every patient is kept on a strict ulcer diet after operation until occult blood has disappeared from the stools, often three or four weeks being required for this to happen. A test meal is given before he goes home: in the rare cases in which free acid is still present he continues permanently on a post-ulcer regime. With achlorhydria a much less strict diet is required, and the patient is told to take 30 grains of iron and ammonium citrate for one week in every four in order to prevent the development of anaemia.

Most surgeons agree that the only operation for a gastro-jejunal ulcer is partial gastrectomy, though it is insufficiently realized that at least 50 per cent. get well with adequate medical treatment; but as it rarely follows gastro-jejunostomy for any condition except duodenal ulcer, it is difficult to see why a primary gastrectomy should not be performed instead of running the much greater risk of performing a secondary gastrectomy in the presence of an anastomotic ulcer.

A good deal of the disagreement about the incidence of the complications of gastro-jejunostomy arises from the fact that many surgeons are unaware that a severe gastro-jejunitis on both sides of the anastomotic line, with or without superficial erosions, is as common a cause of serious symptoms as a chronic ulcer, and is generally responsible for recurrent haemorrhage in the absence of pain. This condition cannot be recognized with the *x* rays nor by inspection of the anastomosis in the course of an operation, with the result that the abdomen is often closed after dividing adhesions or some other equally futile procedure. If partial gastrectomy is performed on the clinical findings, the true nature of the condition is discovered and the patient is cured.—I am, etc.,

New Lodge Clinic, April 15th. ARTHUR F. HURST.

The Omental Plug in Stomach Perforation

SIR,—I agree with Captain A. T. Andreasen's criticism (April 6th, p. 734) of passing a needle through a healthy portion of stomach wall in order to retain the omental plug, and admit it sounds, surgically, rather shocking, but the object was to plug the perforation in such a way that it would remain plugged for perhaps forty-eight hours, by which time the omentum would have done its job. This was the only way that suggested itself to me in the emergency. It is quite likely that pushing the plug in and retaining it with a suture at the point of entry would be equally efficacious; and, although his method is much more orthodox, my "plug" treatment was only suggested for cases in which sutures would not hold for ordinary closure, and the suturing of a portion of omentum over the opening, which we have all done, is likely to be floated off unless accurately carried out. Also, this takes much longer and, in fact, may be impossible.

I believe that the plug is all that is necessary in any perforation, provided it is done soon enough, and, certainly, it is a very rapid method. The reason I have not carried out this method in other cases is that I have not felt justified in experimenting when more orthodox means were available.—I am, etc.,

Swansea, April 15th. C. L. ISAAC.

Diphtheria Immunization

SIR,—The cases described by Dr. C. H. Foley in your issue of April 13th (p. 812) would appear to have been inadequately immunized against diphtheria, since there is no mention of any post-immunization Schick test being performed. It is essential that diphtheria prophylaxis shall be confirmed by the observation of a definitely negative Schick reaction. Unfortunately, I am aware that there are a number of children being treated with diphtheria prophylactic on whom this necessary confirmation is being omitted.

As officer in charge of the Schick-testing clinic of the Woolwich Borough Council, I have noted that the number of Schick-positive cases (post-immunization) is approximately 5 per cent., and, further, that these cases are frequently members of the *same* family. I would venture to suggest, therefore, that Dr. Foley's letter relates to two families, both extremely diphtheria-sensitive, and therefore still prone to infection because of incomplete prophylaxis. The fact that diphtheria antitoxin conferred protection when administered is not surprising, as these cases, presumably, had not the disease at the time of injection, and the antitoxin conferred sufficient passive immunity to guard them over the period of possible infection.

May I, in conclusion, lay stress on the importance of proper post-immunization Schick-testing to ensure that parents will not be lulled into a sense of false security? This type of occurrence is very harmful to the medical profession at a time when there are so many detractors ready to pour cold water on any real advance in preventive medicine.—I am, etc.,

London, W.1, April 13th. W. SMITH.

Hay Fever

SIR,—In the very interesting leader on hay fever in the *Journal* of April 13th, in which you review my paper on that subject, there are some points on which I would like to add a few remarks, with your permission, as possibly I did not sufficiently emphasize these in my paper. Your leader states:

"quite a large number of hay-fever patients react to grass pollens other than Timothy pollen . . . a high proportion of

seasonal hay-fever patients are also hypersensitive to dust, feathers, etc. . . . In these cases Timothy pollen can have only a non-specific effect. . . . As Dr. Harley's patients are tested with Timothy pollen alone, then only those who react to Timothy pollen are treated, with excellent results. . . . In this way a large number of cases not sensitive to Timothy pollen, but very sensitive to other pollens and to inhalant substances, will be missed and not diagnosed or treated as hay fever."

In my paper I intended the term "hay fever" to be limited to cases of sensitivity to grass pollen, as it seems to be unduly stretching the term to make it include paroxysmal rhinorrhoea due to animal dandruffs, etc., or even tree and flower pollens. More than 90 per cent. of the patients who present themselves at the St. Mary's Hospital Hay-Fever Clinic are found to be pure hay-fever cases (grass-pollen-sensitive only), their rhinorrhoea being coincident with the pollinating season of the grasses, and are free of symptoms the remainder of the year. Dr. Freeman[1] investigated the action of a variety of grass pollen extracts on hay-fever patients and found that the true hay-fever case reacted to all the grass extracts tested, and that desensitization by any one extract or by a mixture of extracts resulted in abolition of skin sensitivity to all the extracts; Timothy pollen extract was found to give rather larger reactions than the others, and had a correspondingly stronger desensitizing effect therapeutically. It was concluded that the skin-reacting and desensitizing principles (idiotoxins) of the various grass pollens are immunologically similar, if not identical. If a patient does not react to Timothy pollen he is not regarded as true hay fever. Cases of "hay fever" due to animal dandruffs, wheat flour, pollen of flowers, etc., are diagnosed as paroxysmal rhinorrhoea (horse-, wheat flour-, etc., sensitive), and are treated with their corresponding extracts.—I am, etc.,

St. Mary's Hospital, W., April 15th. D. HARLEY.

Normal Serum in Asthma

SIR,—In the *British Medical Journal* of April 6th (*Epitome*, para. 283) there is a note on placental serum in measles, in which Dr. Y. A. Finkelstein (*Sov. Pediat.*, 1934, iii, p. 34) describes a method of preparing anti-measles serum from the placentae of normal women. It had been tried out on 4,600 children, and was found to be quite as good as, if not indeed better than, convalescent serum. For the past six months I have been injecting in asthma the serum of absolutely healthy young subjects, instead of the patient's own convalescent serum, incubated with peptone.

The blood is allowed to stand in an Erlenmeyer flask for a day or two, and the serum is incubated (with the requisite quantity of chloroform) for an hour at 55° to 60° C., which happens to be the same as that done by Finkelstein. It is injected in doses of 5 c.cm., rising to 8 or 10 c.cm., into the gluteal muscle twice a week for three or four weeks. At the same time Witte's No. 30 peptone and bismuth is also injected intragluteally.

That this, in many cases, is better than injecting convalescent serum is quite certain, although we are at present unable to explain the matter. Allergic serum contains an allergen, usually a very innocent substance, and also a non-precipitating reagin or allergin, both of which differ entirely from the antigen and antibody of infectious disease. It may be that the serum augments the ferment action which transforms protein substances into easily assimilable or easily excretable forms. This may be true of peptone also. Oriel has thrown out the idea that "urinary proteose contains a fraction which occurs in cases of asthma of a certain type, and does not occur in normal persons. Urinary proteose is digested by blood, as peptone is, and it was possible that the proteose in the urine is due to the absence of the power in the blood to digest peptone. The results so far obtained show that the injection of proteose and peptone increases the natural power of the blood to digest them."[1]

That serum from a convalescent asthmatic may not be suitable was shown by a case sent to me by Dr. Absé of Cardiff.

She was a delicate young lady, and could not face any abstraction of blood. She was injected with the convalescent serum of a young man in the left shoulder by Dr. Absé, Witte's peptone 30 and bismuth being also injected. She got greatly better, and on her coming again to see me I gave her an intragluteal injection, on the right side, of the convalescent serum of a middle-aged lady. In about ten minutes the left shoulder became irritable, when it was found to be covered with large wheals, some over one inch in diameter, and with angry areolae. It was a striking sight.

Now both of these donors were well tested with possible allergens, yet they were both quite negative. Of course, it is possible that the allergens may have been missed, and it is also possible that the allergen may have been autogenous, as in 1917[2] I mentioned such a possibility, on the analogy of lens protein. But in this case it was quite evident that the serum of the young man had formed an allergin, which gave a violent Prausnitz-Küstner reaction with an allergen in the serum of the middle-aged lady.

A lady patient suffered from asthma for several winters. She had serum peptone at the beginning of two winters, and though the asthma ceased for a few weeks it always began again. Last October she returned and got six injections of normal serum, also peptone and bismuth. During all the winter she has been perfectly free from asthma.

Other patients have shown the same transition. At first I used donors I got myself, but latterly I have had them from the London Blood Transfusion Service. A donor should not eat or drink anything for four or five hours before he presents himself, as it is known that transfusion from a donor who has previously drunk milk caused allergy in a patient who was milk-sensitive. It is not necessary, however, to take the blood groups.

Experiments by Dale in 1922 showed how powerful the action of normal serum is. It protected guinea-pigs from anaphylaxis with egg white. Kellaway[3] found afterwards that the antibodies began to disappear from the blood, and very soon afterwards from the cells, when the animal was entirely refractory to the antigen. He then tried Armour's No. 2 peptone in doses of 0.1 to 0.5 c.cm. intravenously. It possessed a high degree of protection, and reduced the circulating antibodies to one-third, while it left the cellular antibodies untouched. Here again we cannot explain the protective action of the peptone. But as the egg white (second dose) was injected about two hours after the peptone, the peptone seems to have prevented the antigen from coming in contact with the cellular antibodies, possibly by rapid fermentation in the blood.[4]—I am, etc.,

London, W.1, April 16th. A. G. AULD.

Treatment of Septicaemia

SIR,—Dr. C. E. Lakin's article on the treatment of septicaemia, in the *British Medical Journal* of April 13th, gives us a useful programme upon which to work when we are faced with this condition. Upon the subject of diet I would venture to add some further details, which are based upon clinical experience.

Some three years ago I had occasion to meet Dr. Hugh Carleton, physician to the Bristol General Hospital, over a case of acute generalized septicaemia due to the haemo-

[1] *Lancet*, 1933, i, 573, 650.

[1] Oriel, G. H.: *Progress of Asthma Research Council*, October, 1933, p. 7.
[2] Auld, A. G.: *British Medical Journal*, 1917, i, 580.
[3] Kellaway, C. H.: *Lancet*, 1923, i, 791.
[4] Sterules of Witte's peptone 30 are prepared by Martindale.

lytic streptococcus. He informed me that it had been shown by biochemists that the vulnerability of the red blood corpuscle to *S. haemolyticus* was increased by the predominance of dextrose molecules in the plasma, but diminished by the predominance of protein molecules. Acting upon this assumption, he recommended that my patient, who was being saturated with glucose lemonade, should be transferred to a diet composed principally of beef tea, meat juices, egg flips, and plasmon. This was done with admirable results.

Since that time it has been my practice to put every case of acute infection by the haemolytic streptococcus upon a liquid diet of high protein content, and the results have been uniformly satisfactory ; nor has there been any case of nephritis. Since the incidence of infections by haemolytic streptococcus is relatively high among children attending public schools, it may perhaps be useful to revise our old-established idea of the universal value of glucose in all acute infectious fevers.—I am, etc.,

Sherborne, April 16th. JOHN WHITTINGDALE.

Fibrositis in General Practice

SIR,—In reading Dr. W. A Maxwell Telling's paper, " The Clinical Importance of Fibrositis in General Practice," I was struck by a number of important omissions.

No mention is made of diet among the aetiological factors. We know that this plays both a remote and a more direct part. The role of faulty feeding in the causation of dental and other forms of sepsis, intestinal stasis, toxaemia, etc., has been demonstrated in recent years by the work of the Mellanbys, McCarrison, and others. There are, in addition, a number of dietetic misdeeds which are particularly effective in precipitating and keeping up an attack of fibrositis. The most usual are: an insufficient intake of liquid ; excess of sugar, sweets, and meat ; certain alcoholic beverages ; a superabundance of oranges or orange juice in some people.

No mention is made of faulty posture. In describing methods for distinguishing between fibrositic spots in the abdominal wall and visceral disease, no reference is made to what in my experience are the two most helpful aids to diagnosis: (1) faradic stimulation with a button electrode ; (2) gentle pinching of the abdominal wall.

Massage is the only physical remedy extolled by Dr. Maxwell Telling. It is undoubtedly most helpful, but it can be rendered less unpleasant for the patient and more effective if preceded and accompanied by radiant heat or infra-red rays. Recovery can be hastened by the application of anodal disk galvanism. Localized reaction doses of ultra-violet rays are also effective in some cases. Nothing is said about manipulations. Much of the osteopath's revenue results from mismanaged cases of fibrositis. —I am, etc.,

London, N.W.1, April 9th. CLEMENT NICORY.

Treatment of Diphtheritic Paralyses

SIR,—In continuation of the series of articles on the management of some of the major medical disorders met with in general practice, Dr. Alex. Joe's article on " Treatment of Diphtheria " appeared in the *Journal* of April 6th. May I be allowed to comment on one particular part of the treatment—that of the paralyses?

Dr. Joe states: " The post-diphtheritic palsies proceed to spontaneous recovery, and need no treatment beyond tonics." " In severe cases of generalized paresis, in which various groups of skeletal muscles are involved, massage, passive movements, and electrical treatment are necessary." I agree that the post-diphtheritic palsies proceed to spontaneous recovery, and therefore I disagree that the prescription of massage, passive movement, and electricity is a necessary part of the treatment of severe cases of generalized paresis. What is essential on the part of the physician in the treatment of all cases of paralysis, and especially severe cases of generalized paresis following diphtheria, is a knowledge of the orthopaedic principles governing muscle rest and muscle re-education. The prevention of deformities during the stage of severe paresis of skeletal muscles and the gradual recovery of complete function by the re-education of voluntary movement is the only necessary treatment. I was recently called in consultation to a case of severe generalized paresis of this type in a middle-aged man. The incidence of the paresis was most marked in the legs. I was able to give a completely favourable prognosis. In this case the nurse in attendance was able to carry out all the instructions relative to the muscle weakness.

Dr. Joe's article is one of a series written for the instruction of the general practitioner. In these days of economic crisis it is advisable to avoid unnecessary expense in treatment. In my opinion the employment of a trained nurse in a case of severe generalized paresis following diphtheria makes it quite unnecessary to call in a trained masseuse for massage, electricity, and passive movements. A patient normally proceeding to spontaneous recovery does not require these adventitious aids to treatment.—I am, etc.,

CHARLES V. MACKAY,
Formerly Medical Superintendent, Infectious
Italy, April 13th. Diseases Hospital, Melbourne.

Tuberculosis in Home-contacts

SIR,—In reply to Dr. George Jessel's comment (April 20th, p. 852) on the title of my paper " Tuberculosis in Home-contacts . . ." I should like to state that the footnote to the title indicating that it was an extract from a report, " The Prevention of Tuberculosis in Childhood . . .," intended to convey that the paper dealt only with children. No one would wish to deny the possibility of home-contact infection in adolescents and adults, but it is clear that its study is rendered difficult owing to the very high percentage of tuberculin-positive individuals at that age and the fact that the considerable time spent by them outside the home environment makes it almost impossible to decide where the infection originated.—I am, etc.,

London, S.W.7, April 21st. G. GREGORY KAYNE.

Evipan in Ophthalmic Surgery

SIR,—We heartily agree with Dr. Lloyd Johnstone (*Journal*, April 13th, p. 761) that unwarranted overenthusiasm is often given to the use of new therapeutic methods in medicine. We would, however, like to point out that it is a mistake to draw conclusions as to the disadvantages or advantages of any particular new therapeutic method without thorough trial and comparison with the older and more widely accepted methods. We therefore feel that Dr. Lloyd Johnstone's somewhat limited experience of the use of evipan in only twenty-two cases hardly justifies the conclusions which he has drawn. It was not until we had used evipan for considerably more cases than this that we fully realized its great value, and knew how to overcome and deal with the few disadvantages that at times it manifests.

At the Royal Westminster Ophthalmic Hospital we have now used this drug in nearly 250 cases, and no fewer than twelve different ophthalmic surgeons operating at this hospital have found it most satisfactory and to possess advantages over other methods of anaesthesia for ophthalmic work. We have already pointed out (*Journal*, 1934,

ii, 589) that the experiences of Dr. H. Klitzch in over a hundred cases have been similar. With increased experience and skill in the use of evipan we have found that the "disadvantages" referred to by Dr. Lloyd Johnstone can be so minimized or abolished that they do not in any way interfere with the satisfactory performance of the operation.

We consider that the suggestion made by Dr. Blair Gould, in his letter of April 20th, that the use of evipan in ophthalmic surgery would appear to be contraindicated, is entirely without justification, giving due consideration to the published literature on the subject.—We are, etc.,

T. K. LYLE.
F. G. FENTON.

Royal Westminster Ophthalmic Hospital, W.C.2, April 20th.

SIR,—Having read with interest the two articles on the above subject published in the *Journal* of April 13th, I should like to state that in my experience at the Royal Berkshire Hospital, Reading, evipan has been most useful, not only as a means of general anaesthesia for ophthalmic surgery, but also as a therapeutic measure in cases of acute congestive glaucoma. I consider that the various undesirable effects referred to by Dr. Lloyd Johnstone do not, with practical experience over a large number of cases, in any way impede the surgeon or interfere with the smooth convalescence of the patient.—I am, etc.,

G. T. WILLOUGHBY CASHELL.

Reading, April 20th.

Dr. Cheadle's Trip Across Canada

SIR,—Dr. D. A. Stewart (*Journal*, April 13th, p. 798) has formed the impression that, when summarizing the late Dr. Cheadle's journey from the Atlantic to the Pacific across Canada in 1863, I represented him as blazing a hitherto unknown trail. If he will read what I wrote more carefully he will see that I suggested no such thing. Nor did I even say that Cheadle was the first to propose a trans-Canadian railway: what I did emphasize was that his (and Lord Milton's) advocacy of such a project brought the question to the front as a matter of practical politics, and resulted in the construction of the Canadian Pacific Railway.

I am much obliged for his information about the publication in Ottawa in 1931 of Cheadle's diary; and as I hope to visit Canada this year with the British Medical Association I will try to find an opportunity of seeing this evidently interesting publication.—I am, etc.,

HENRY ROBINSON.

London, S.W., April 17th.

"Cancer and Causation"

SIR,—Mr. Morley Roberts would have been well advised, I think, had he assumed the role of Brer Rabbit, for my remarks about him were as gentle as they were kindly in intention. It is not necessary, I am glad to say, to comment on Mr. Morley Roberts's asides on certain phrases in my letter to the *British Medical Journal* (April 13th), for your readers are capable of judging whether or not he is merely indulging in verbal quibbles. Mr. Morley Roberts repeats, however, in his letter a misleading statement concerning my views on the nature of the trophoblast and of chorion epithelioma, also to be found in his book (*Malignancy and Evolution*, p. 167)—namely: "So far as I am aware no one but Blair-Bell (1924–5) seems to have reached this conclusion, which was suggested by myself in other work (1920)." I am afraid I have read nothing on the subject by Mr. Morley Roberts except the book mentioned above, in which it is implied that in this matter the priority belongs to him. Alas! my first note on the subject is dated November 14th, 1909, and many years later I learnt from the late Professor Adami that in 1902 he had published a paper in a not widely read journal setting forth his views from a similar standpoint. I am ready to believe that Mr. Morley Roberts's ideas may have been independently formed, but as he quotes in his references my paper in which the history of Adami's and my views are recorded, he should not have been ignorant of the facts. Finally, with regard to former records concerning the biological significance of cancer, I venture to quote the following observations of a distinguished pathologist:

"The limitless growth of tumours early suggested that the cancerous tissue had lost the control of the organism. Recamier in 1829 definitely formulated this idea, and the conception has steadily enlarged with the progress of biology."

—I am, etc.,

W. BLAIR-BELL.

April 20th.

*** We cannot continue this correspondence.—Ed., *B.M.J.*

Sterilization of Women: The Legal Position

SIR,—Let me assure Dr. Fairfield that I am not suffering from any confusion of thought on this subject. Unfortunately, in the desire for brevity I seem to have given her an opportunity of confusing what I should have thought was a very simple analogy. So, at the risk of wasting valuable space, let me proceed in detail to clarify a position which I should have thought was already clear.

To a charge of larceny consent is, of course, a defence: to a charge of wounding it certainly is not. Obviously, if the owner of property consents to its removal, there is no larceny. But even if he does not consent there may be a defence of necessity—for example, a starving man may (in theory) take bread from another man, for it is better that bread should be taken than that a man should starve. Equally, though it is generally unlawful to wound a man even with his consent, necessity is here also a defence, as in the case of an ordinary surgical operation, for it is better that a man should lose his leg than that he should lose his life or be permanently ruined in health. But as I pointed out, an indirect benefit to the person concerned or to the community is not a sufficient excuse for taking the property of another; and it seems to me that, analogously, in considering whether an act of wounding is lawful one must distinguish between a direct and an indirect good achieved by it. I should have thought that to save a woman's life was a more direct beneficial result than saving her from the likelihood that in the event of her ever becoming pregnant the child born would be physically or mentally so defective that its birth was not to be desired. After all, sterilization can never be in the strictest sense necessary, for the woman has always the alternative of abstaining from sexual intercourse.

Perhaps I am making an unjustifiable ethical assumption, but I think I have now made my analogy absolutely clear. I was not discussing the question whether the consent of the patient is a defence to a charge of unlawful wounding, a question answered in the negative last summer by the Court of Criminal Appeal, but the question in what circumstances a laudable motive justifies an act prima facie unlawful, and the principle of law seems to me the same, whether or not consent is a defence to the particular crime charged. I hope this letter also answers sufficiently that of Mr. Stoker.—I am, etc.,

CECIL BINNEY.

Temple, E.C.4, April 11th.

Ether Convulsions

SIR,—Having read Mr. Wilfred Willway's memorandum in your issue of April 13th (p. 764), I respectfully suggest that the anaesthetic difficulties experienced were not ether convulsions. In my opinion they were muscle spasms due to ethyl chloride.—I am, etc.,

P. J. SMITH, M.B., B.Ch.

Drimoleague, Co. Cork, April 15th.

Obituary

SIR RICHARD STAWELL, K.B.E., M.D.

Consulting Physician to the Melbourne Hospital; President-Elect of the British Medical Association

We have to announce with deep regret the death in Melbourne of Sir Richard Stawell, who had been unanimously chosen by his colleagues of the Victorian Branch to preside over the forthcoming Annual Meeting of the British Medical Association next September in Melbourne.

Richard Rawdon Stawell was born at Kew, a suburb of Melbourne, on March 14th, 1864; his father, the late Sir William Foster Stawell, was Chief Justice of Victoria. His school days were spent at Marlborough College and at Hawthorn Grammar School, whence he passed to Trinity College, Melbourne. In 1888 he graduated M.B., B.S. of Melbourne University, and after holding resident posts proceeded M.D. in 1890. During the next three years he did post-graduate work in the United States, in Germany, and in London, obtaining the D.P.H. of the English Conjoint Board in 1891.

On returning to Victoria in 1893 Stawell was appointed to the honorary medical staff of the Children's Hospital, with which he remained closely associated until his election in 1914 as consulting physician. From 1894 to 1900 he was honorary co-editor of the *Australian Medical Journal*. From 1895 to 1906 he served on the committee of the Medical Society of Victoria, and took an active part in the negotiations for the amalgamation of that society with the Victorian Branch of the British Medical Association. He was appointed vice-president of that society in 1906, and in the following year the amalgamation took place. In his presidential address Sir Harry Allen spoke of "the inestimable advantage of being represented on the Central Council by Dr. Stawell during his visit to England."

From 1902 until 1924, when he reached the retiring age and was appointed consulting physician, Stawell served as an active member of the honorary medical staff of the Melbourne Hospital. In 1906 he was elected a member of the Committee of Management of the hospital, and for many years he was chairman of the House Committee. In 1928 he was elected president of the hospital, resigning that post in favour of the late Sir George Syme. Of his gifts as a teacher and of his enthusiasm for clinical education a correspondent, Dr. C. V. Mackay, has written lately in these columns.[1]

In 1908 the Victorian Branch elected Stawell junior vice-president, and two years later he became president. During this and the following years he took a prominent part in the negotiations for amalgamating the two Australian medical journals—namely, the *Australian Medical Gazette* (N.S.W.) and the *Australian Medical Journal* (Victoria). This amalgamation came to pass in 1914, the new weekly periodical being the organ of all the Branches of the B.M.A. throughout Australia, under the title of the *Medical Journal of Australia*.

In 1915 he served with the Third Australian General Hospital on active service, with the rank of lieutenant-colonel A.A.M.S., but he returned in the following year to continue his clinical teaching at the Melbourne Hospital and to perform other home service work. Later he was appointed a member of the Medical Advisory Committee to the Repatriation Department of the Commonwealth. In 1920 he was president of the Section of Medicine at the Australian Medical Congress in Brisbane. In June, 1929, he was created K.B.E., and in the following year became first president of the newly formed Association of Physicians in Australia, delivering the Halford Oration at Canberra in November. At the Centenary Meeting of the British Medical Association in 1932 he was vice-president of the Section of Medicine.

Sir Richard Stawell married in 1908, and leaves one son and two daughters. We hope to publish next week an appreciation of his work and character by an intimate friend and fellow member of the Central Council of the British Medical Association.

[1] "Melbourne Hospital Memories," *British Medical Journal*, March 2nd, 1935, p. 431.

HERBERT PECK, M.D., D.P.H.

Formerly Medical Officer of Health, Chesterfield R.D.C.

The death of Dr. Herbert Peck on April 4th, at the age of 73 years, removes from the Chesterfield area and from the local Division of the British Medical Association a distinctive and greatly respected personality.

A native of Wigan, he was educated at the local Grammar School and, later, at Edinburgh, where he qualified L.R.C.P., L.R.C.S. in 1886, and subsequently graduated M.B., C.M., and M.D. (1899). In 1890 he was among the first eight to take the Diploma of Public Health at Cambridge. Before coming to Chesterfield Dr. Peck had had considerable experience in many types of practice. For some years he was an assistant surgeon to the G.W.R. Provident Association at Swindon and, later, assistant medical officer to the West Derby Union. His first appointment in Derbyshire was as medical officer of health to the combined districts of Chesterfield borough and rural areas, but on the division of these areas he became M.O.H. to the Chesterfield Rural District Council. In one or the other capacity he served the area faithfully and conscientiously for thirty-three years, until his retirement in 1931. He had been in failing health for several years before his death.

Before his last illness Dr. Peck had been for many years a loyal and valued member of the local B.M.A. executive, and represented the Division at the Portsmouth meeting in 1923, and in 1923–4 he served on the Public Health Committee of the Association. He was chairman of the Division in 1922, and president of the Midland Branch in the same year. He was also a Fellow of the Society of Medical Officers of Health and a past-president of the North-Western Branch, and was at one time a frequent contributor to public health literature. But medical questions by no means absorbed his interest. For many years he was a member of the Derbyshire Archaeological Society and an active supporter of its investigations, and, in addition, he was an authority on numismatics, at one time possessing a very valuable collection of coins. It was on one of his excursions into the remoter parts of Derbyshire in pursuit of these hobbies that Dr. Peck found his way into medical literature, not as a contributor, but as a "case." On the moors above Chatsworth he was bitten on the thumb by a snake which he thought was harmless, but which turned out to be an adder. Alone and far from help, he collapsed and was found some hours later almost moribund. He was carried to a gamekeeper's shelter and there attended by Dr. Edleston of Baslow. Only after a strenuous and anxious time was he brought round sufficiently to be taken home. This very exceptional incident was fully reported in the *Journal* some five-and-twenty years ago. Though removed for some years from participation in medical and public work Dr. Peck will be greatly missed by his professional and lay colleagues in the Chesterfield area.

H. W. P.

Mr. JOHN ANDREW CAIRNS FORSYTH, F.R.C.S., who died on April 5th at his residence at Fairholm, Alloway, Ayr, had been living in retirement for the last year and a half, owing to ill-health. He was educated as a boy at the Leeds Central Higher Grade School (now the City of Leeds School), of which his father was at that time head master, and proceeded to the University, where he graduated M.B., Ch.B., in 1901, having previously obtained his M.Sc., in 1900. He also studied in Berlin and Vienna, but the early part of his life received its direction primarily from his most intimate association with Sir Arthur Mayo Robson, whose house-surgeon he was at the Leeds General Infirmary, and to whom he later became assistant in London. Mr. Forsyth was well known in London, where he practised in Harley Street, and was senior surgeon to the Royal Waterloo and the French Hospitals. During the war he was medical officer in charge of the Urgency Cases Hospital of the French Army, and was subsequently created a chevalier of the Legion of Honour. In 1918 he won the Jacksonian prize of the Royal College of Surgeons. He became a member of the British Medical Association in 1908, and was also a member of the West London Medico-Chirurgical and the Chelsea Clinical Societies, and a Fellow of the Royal Society of Medicine. His contributions to the literature included articles on surgical subjects to various periodicals, and he was the author of the article on diseases of the pancreas in the *Encyclopaedia Medica*.

Dr. RHYS TUDOR THOMAS, who died at Cardiff on March 27th, had been in practice in that city for over thirty years. He was born at Carmarthen in 1872, and was educated at the High School, Oswestry, the University College of Wales, Aberystwyth, and University College Hospital, London, where he qualified M.R.C.S., L.R.C.P., in 1896, and graduated M.B. of the University of London in 1900. Dr. Ivor J. Davies writes: Dr. Thomas was a very zealous member of the British Medical Association throughout his long period of practice and a most popular figure at the meetings of the Cardiff Division. He attended a clinical meeting of the Division on the day preceding that of the commencement of his fatal illness. He was much admired by his colleagues for his consistency of character and close regard for their professional interests. He exemplified the best type of practitioner, and his interest in the progress of medicine never flagged. We could always rely on his warm support at the B.M.A. meetings, and his regular attendance and enthusiasm at the clinical meetings were most commendable. After a severe illness in 1922 his health gradually deteriorated, but his courage and cheerfulness were undiminished. He was soon obliged to give up night work, and this naturally led to a considerable falling off in practice. Yet he never became embittered, and accepted these blows of circumstance with a rare equanimity of spirit. He was greatly loved by his patients, for he never spared himself until he was finally compelled to constrict his work. To those of us who were privileged to meet him frequently, he was a most helpful friend, and I never heard him say an ill word of anyone. He was unmarried, and was buried in his native town of Carmarthen, where, soon after qualification, he held the resident post at the infirmary.

The death took place on April 12th at Blairgowrie, Perthshire, of Dr. PETER WILLIAM SHAW, who for forty years had been a well-known medical practitioner in East Perthshire. Dr. Shaw had been in poor health for about two years. He was born at Finegand, Glenshee, a son of the late Mr. William Shaw, from whom he inherited Mount Blair estate, Glenshee, part of which had been in the Shaw family since 1723 and part since 1573. After taking a medical course at Edinburgh University, he graduated M.B., C.M. in 1892. After a period spent as resident physician in the Victoria Hospital for Consumption at Edinburgh, he became assistant and later partner with his brother-in-law, Dr. Charles S. Lunan, at Blairgowrie. On the retirement of the latter in 1913, Dr. Shaw took over the practice. He held various public appointments, such as that of medical officer to Kirkmichael parish and medical superintendent of Strathmore Fever Hospital. He took a keen interest in various forms of sport, including cricket, fishing, and curling, and was for over thirty years president of Blairgowrie Curling Club. He is survived by a widow, a daughter, and a son, Dr. William Shaw, who has taken over the practice in Blairgowrie.

We regret to record the death in London at the age of 69 of Dr. THOMAS ARTHUR MUNRO FORDE of Southsea. He qualified M.R.C.S., L.R.C.P. in 1891, and, after holding posts at the South-Western Fever Hospital, Stockwell, St. Thomas's Hospital, and Evelina Hospital for Sick Children, he moved to Southsea. At the time of his death Dr. Munro Forde held the posts of consulting surgeon to the Royal Portsmouth Hospital and honorary medical officer to the St. Andrew Deaconesses' Home and Home of Comfort. He had been a member of the British Medical Association for thirty-eight years, and on the occasion of the Annual Meeting of the Association at Portsmouth in 1899 he held the office of secretary to the Section of Laryngology and Otology, and when the Association again met at Portsmouth (in 1923) he was vice-president of the Section of Surgery. At the funeral at Highland Road Cemetery on April 16th the chairman of the Portsmouth Division, Dr. C. J. Mayhew, represented the British Medical Association. Dr. Munro Forde was a prominent Freemason, and held the ranks of Past Grand Deacon and Past Provincial Junior Grand Warden. Many of his brother Freemasons were present at the funeral service at St. Jude's Church and at the graveside, including the Earl of Malmesbury, Provincial Grand Master of Hampshire and the Isle of Wight. Dr. Munro Forde was a brevet lieutenant-colonel (retired) of the R.A.M.C., T.A.

The Services

DEATHS IN THE SERVICES

Lieut.-Colonel Frederick Peter Nichols, R.A.M.C. (ret.), died at Dawlish on April 4th, aged 78. He was born at Norwich on February 9th, 1857, the eldest son of the late William Peter Nichols, F.R.C.S., of that city, and was educated at Shrewsbury, at St. Katharine's College, Cambridge, where he graduated M.A. in 1879 and M.B. in 1881, and at Bart's, also taking the M.R.C.S. in 1880. Entering the Army as surgeon on July 30th, 1881, he became lieutenant-colonel after twenty years' service, and retired on February 9th, 1912. He served in the Tirah campaign, on the North-West Frontier of India, in 1897-8, with a general hospital. After retirement he was employed at Bodmin, in 1912-14, and during the war of 1914-18 on coast defences in Cornwall.

Surgeon Captain Percival James Bodington, late Royal Horse Guards, died at Halesowen, Worcestershire, on April 4th. He was educated at Edinburgh, where he graduated M.B., Ch.B. in 1899. He at once went out to South Africa as a civil surgeon for the war, and soon after joined the R.A.M.C. as a lieutenant on April 11th, 1900. After the war he was posted to the Royal Horse Guards, and, promotion being very slow in the Household troops, was still only a surgeon captain when he retired on April 9th, 1920. During the South African War he took part in operations in the Transvaal and in Cape Colony, and received the Queen's and King's medals, with two clasps to each. After leaving the Army he had filled the posts of assistant medical officer at Yardley Road Sanatorium, Birmingham, and of medical officer of Romsley Hill Sanatorium, Halesowen.

Major William Forrester, Indian Medical Department (ret.), died at Rajpur, Mussuri, on February 28th, aged 75. He was born on March 3rd, 1859, the son of John William Forrester of Lucknow. His grandfather, of the same name, was one of the civilian defenders of Lucknow during the siege in 1857. Entering what was then known as the Subordinate Medical Department, about 1878, he received his medical education in the military class at Calcutta Medical College. In 1895 he took furlough, entered at St. Thomas's, and took the M.R.C.S., L.R.C.P.Lond. in that year. He attained the rank of senior assistant surgeon, with rank of major, on November 14th, 1907, and retired on March 3rd, 1914. He served on the North-West Frontier of India, receiving the Frontier medal with a clasp. For several years before his retirement he had been in civil employ in the United Provinces, where he held the post of civil surgeon of Sitapur. He became a member of the British Medical Association in 1909

Medico-Legal

THE PATIENT AS TESTATOR

(*Concluded from page 869*)

PART II.—ILLUSTRATIVE CASES

It may be helpful to glance at a few cases and judgements in which great masters of the law have shown how the question "Had the testator a sound disposing mind?" may be answered.

Of all the reported cases on this subject the most important and illuminating is that of Banks *v.* Goodfellow (1870), and any doctor who has ready access to a legal library will find much profit in reading this case in full.[1]

John Banks, the testator, had been insane for years. About twenty-four years before his death in 1865 he had been kept in the county asylum, and after his discharge had retained certain fixed delusions. He was convinced, for example, that a certain enemy of his called Featherstone Alexander, who had died some years before, still continued to pursue and molest him; the bare mention of this man's name used to throw him into a state of violent excitement. He was constantly seeing devils, and complaining that they tormented him. Two years before his death he developed epileptic fits, which made his mental state still worse. On the other hand, he managed his own money affairs quite satisfactorily. Late in 1863, in the presence of his rent collector and a solicitor, he produced an old will in which he left all his property to his sister, who had died. He instructed the solicitor to make a new will leaving everything to his young niece, Margaret Goodfellow, who was now his next-of-kin and lived with him.

No one remembered the possibility that Miss Goodfellow might die young, but it so happened that Banks died in 1865 and Margaret two years later, still under age and unmarried. The property she had inherited under Banks's will therefore went automatically to her half-brother, her heir-at-law (this legal relationship became obsolete in 1926), instead of to the children of Banks's half-brother, who had long been dead. The eldest of these children, also called John Banks, brought an action at assizes to try the validity of the will, on the ground that Banks, through insanity, was not capable of making a valid will. The jury found that the will was valid, and John Banks appealed to the Court of Queen's Bench, which in those days exercised the function, in cases on common law, of the present Court of Appeal.

The judgement of that court, delivered by Lord Cockburn, Chief Justice, is the foundation of all modern law on testamentary capacity. The question for decision was: Banks's delusion could have had no influence on the provisions of the will; did it, notwithstanding this, destroy his capacity to make a legally valid will? In answering this question, Lord Cockburn pointed out that for many good reasons the law of England allows a testator to leave his property entirely as he likes. It considers that the instincts, affections, and common sentiments of mankind may be trusted to secure a better disposition of the property—one more accurately adjusted to the requirements of each particular case—than the law could obtain by applying stereotyped and inflexible rules. Since this power entrusted to the testator involves moral responsibility, it is essential that he should possess the intellectual and moral faculties common to man's nature. He must understand the nature and effects of the act, and the extent of the property of which he is disposing; he must be able to comprehend and appreciate the claims to which he ought to give effect. Therefore, it is essential that no disorder of the mind should poison his affections, pervert his sense of right, or prevent the exercise of his natural faculties. No insane delusion must influence his will in disposing of his property, and bring about a disposal of it which, if the mind had been sound, would not have been made.

This, then, said Lord Cockburn, is the measure of the degree of mental power which should be insisted on. If the human instincts and affections or the moral sense become perverted by mental disease; if insane suspicion or aversion take the place of rational affection; if reason and judgement are lost and the mind becomes a prey to insane delusions calculated to interfere with and destroy its functions and to lead to a testamentary disposition due only to their baneful influence—in such a case the will ought not to be allowed to stand. Where, however, an insane delusion exists but has not affected the general faculties of the mind and can have no effect upon the will, there is no sufficient reason why the testator should have lost his right to make a valid will. Such a question may be very difficult to decide, and may involve much nicety of discussion, but is not beyond the power of a jury directed and guided by a judge. Banks thought he was pursued by spirits, and that a man long since dead came personally to molest him. Neither of these delusions—the dead man not having been in any way connected with him—could have had any influence upon him in the disposal of his property, and his will was therefore good.

[1] (1870), L.R. 5 Q.B., 549.

RATIONAL ACTS BY INSANE PATIENTS

If the will itself is a sensible document the courts will be very reluctant to set it aside, however disordered the conduct of the testator may have been.

In Cartwright *v.* Cartwright (1793), Mrs. Cartwright was a chronic mental patient under private care in her own home. Her doctor forbade her to read or write. One day she demanded a pen, ink, and paper, and when they were refused went on asking for them, and became noisy and violent. Her nurse produced them in order to keep her quiet, and untied her hands. She then spoiled piece after piece of paper, tearing them up and throwing them wildly into the grate; she walked up and down the room many times in a wild and disordered manner, talking and muttering to herself. After nearly two hours of this she finally produced a short will in perfectly sensible terms, leaving her fortune to her nieces and gifts to her executors and servants, and appointing executors and trustees. (In those days witnesses were not required for dispositions of personal property.) She asked for a calendar and dated the will, and then asked for a candle and sealed it. After this incident she was just as disordered as she had been before, except that some time afterwards she discussed what she had done with a relative, showing her the will and explaining that no witnesses were necessary because her estate was all personal.

The court upheld the will because it was "a rational act rationally done without assistance." Sir William Wynne said: "Is this insanity? In my apprehension, it is not; it seems to me that she was vexed at her mistakes, which I think shows that she had at the time her senses about her, and I think it appears likewise that she was not then in fact in the disturbed condition she was before and after." If, he said, a testator makes a will which appears to be "wise and orderly framed," the same ought to be accepted for a lawful testament, "even although it cannot be proved that the testator useth to have any clear and quiet intermissions at all." The strongest and best proof that the will was made in a "lucid interval" is that its provisions appear to be sensible—"a rational act rationally done."

Medical men should therefore consider the circumstances very carefully before they dismiss a certified mental patient as incapable of making a valid will. A certificate by no means settles the question of whether a person's will is valid or not, and even a gravely disordered patient may be capable of remembering what property he has and who ought to have it.

A third and quite a recent instance of the application of the law on testamentary capacity is the Christie case, which was tried in 1931. It was reported in the *Times*, but not in any of the series of law reports, as it raised no new principle of law. An account was published in the *Lancet* (1931, i, 782).

The testator was a man of vigorous health and dominating personality until 1914, when he suffered from pneumonia. In 1918 he had a stroke; other attacks followed and his

disability increased. Speech became difficult, and was limited to single words, which were not easily produced. In June, 1924, he was certified and removed to a mental home, being taken away soon afterwards. In August his wife was appointed receiver of his estate. In January, 1925, he made a will disinheriting his wife and son. The solicitor taking his instructions adopted the unusual but prudent course of causing four medical practitioners to be present at the execution of the will. Two of them witnessed his signature; all four vouched that they were satisfied of his capability. They had heard the will read over to him, they had been encouraged to ask questions, and they had tested his knowledge of what he was doing. A number of local witnesses gave evidence that he was sane, that they always understood what he wished to say, and that he understood them, that he never said or did a foolish thing, that he was a shrewd judge of cattle, and so on.

Lord Merrivale, who tried the case, said that it was not until he had heard the evidence of the wife that he doubted whether the testator had known and approved the conditions of his 1925 will. After hearing the evidence he found himself unable to be certain of the testator's sound disposing mind; the burden of proof rested on the parties propounding the will, and had not been discharged; so he pronounced against the will, finding that the testator, by reason of progressive deterioration of the brain due to arteriosclerosis, was wholly insane and unaccountable for his actions in 1924. "I am satisfied," he said, "that Mr. Christie was suffering from a progressive disease which affected his mental faculties; it deprived him of the means of knowledge, of the scope of knowledge, and of the capability for judgement which were necessary to give him testamentary capacity. With regard to his wife and son, whom the will of 1925 was intended to dispossess, he had an insane delusion that they hated him."

The *Lancet* comments, properly, that a mere mistaken conclusion that his wife and son hated him would not have invalidated the will, but disorder of the mind had poisoned the testator's affection, perverted his sense of right, and prevented the exercise of his rational faculties. A mere capricious, or even malicious, disposition with the object of injuring his wife and son would not of itself have been invalid, but would have been unnatural, and therefore would in any case have brought his capacity under suspicion. His will could not claim, like Mrs. Cartwright's will, the immunity of a rational act rationally done. There was plenty of evidence that Christie's mind was far from sound. When a testator has been at any recent time of unsound mind, the persons who uphold his will have to prove that he had testamentary capacity when he made it; those who oppose the will do not have to prove that he was incapable, for this is presumed. Lord Merrivale would therefore have been justified in finding against the will even if he had not been certain that the testator was actually incapable when it was executed.

Universities and Colleges

UNIVERSITY OF BIRMINGHAM

The Council has appointed Mr. J. S. M. Connell, F.R.C.S.Ed., to be Lecturer in Applied Anatomy (Midwifery and Diseases of Women); Dr. R. E. Jones to be Lecturer in Bacteriology and Assistant Bacteriologist in the Public Health Laboratory, in place of Dr. Baylis Ash; and Dr. Fritz Jacoby, to be Research Assistant in Tissue Culture and Assistant Lecturer in Histology.

UNIVERSITY OF GLASGOW

A graduation ceremony was held on April 20th, when the following degrees, among others, were conferred:

M.D.—*W. R. Snodgrass, †D. Clyde (*in absentia*), ‡W. A. Murray, ‡M. M. Scott ‡W. Tennent, ‡J. A. Waterman (*in absentia*), J. Leishman, E. W. McCormick, Jean MacI. Mackintosh, A. W. McRorie (*in absentia*), C. D. F. Morton, F. R. Wilson.

M.B., Ch.B.—*A. M. Pugh, *T. Crawford, *R. G. Henderson, ‡D. H. Wallace, ‡J. A. C. Knox, ‡J. B. Brown, R. G. Anderson, S. Y. Baird, B. N. P. Bannatyne, R. S. Barclay, P. McI. Bennett, A. C. Blair, W. M. Boyd, D. Campbell, Elizabeth N. Christie, D. S. Crawford, W. F. Cruickshank, I. McN. Drysdale, J. W. Eidlin, A. W. V. Eley, A. D. Fleming, Maev Gallagher, Mima M. Gemmell, W. R. Gemmell, H. B. Gillespie, A. Glasser, J. Gordon, J. F. Harper, Phebe N. Harvey, W. Hirshow, A. Iredale, A. C. Jacobsen, D. T. Kemp, A. S. Kitchin, Prince Herbert Chukuwetalu Kodilinye, J. H. Levack, L. Levine, I. Livingstone, J. McAulay, J. McCreadie, R. MacG. McGowan, A. F. McIntyre, J. P. McIntyre, G. N. MacKenzie, A. C. Mayer, K. R. Minto, N. R. Murdoch, A. M. Murray, H. Richmond, M. S. Robertson, W. Sharpe, J. A. Sinclair, S. Slonimsky, J. A. Squair, R. Steinacre, Sarah Stewart, G. Struthers, J. H. Taylor, A. Tracy, J. Travers, E. H. Wallace, Jeanie F. Watson, I. B. L. Weir, D. Wolfson, D. Wright, J. Wyper.

* With honours. † With high commendation.
‡ With commendation.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the Royal College of Physicians, held on April 15th, Lord Dawson of Penn was re-elected President.

Dr. O. F. F. Leyton and Dr. F. M. R. Walshe were appointed Examiners to the Conjoint Board in Medicine and Ophthalmic Medicine respectively.

Lord Horder was appointed representative of the College on the National Council for the Disposition of the Dead; Surgeon Vice-Admiral Sir Reginald Bond representative on the Professional Classes Aid Council; and Dr. T. W. Wadsworth delegate to the twenty-first annual conference of the National Association for the Prevention of Tuberculosis at Southport, June 27th to 29th.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Surgeons, to the following candidates:

H. L. Anand, E. J. Baldwin, G. D. J. Ball, A. H. Briggs, R. U. Hingorani, V. V. H. Hoakai, Alice B. Laker, T. B. Law, L. A. Lewis, F. M. Lyons, A. Mellick, J. D. Saggar, L. R. Sarin, Captain P. Shannon, I.M.S., E. Wolstein.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the requisite examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P. and S.Glas.

K. R. Minto, H. A. Korn, H. S. Berent, M. Schmuschkowitz, G. G. Macrae, H. A. J. P. Strecker, L. J. W. Wurzburger, A. E. Martin, H. Abrahamsohn, K. Strauss, R. K. A. van Someren, G. D. W. Adamson, F. Abrahamsohn, Anneliese Schloss, A. Buchan, H. D. B. North, N. Anderman, Balbina Lurje, H. Droller, T. A. B. Mason, G. P. A. A. Nayagam, A. Watt, H. Buxbaum, K. Silverstein, W. O'Callaghan, A. Model, W. Misch, P. T. Weyl, C. V. De Biaso, B. Lux, E. Goldschmidt, E. Flatow, A. M. Geissa, Florizel Westbourne-Aird, E. St. M. Brett, J. C. MacDougall, H. A. Magnus, W. H. Jervis, M. Ismail S. Simon, A. Philipp.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Before adjourning, the House of Commons completed the committee stage of the Budget resolutions.

On the motion for the adjournment Mr. G. Shakespeare, Parliamentary Secretary of the Ministry of Health, made a reassuring statement concerning the nation's water supplies. Town reservoirs, he said, which this time last year were depleted, were now full. The view of the Water Advisory Committee was that even if we had a dry summer we could face it without apprehension in any quarter of the country. Referring to rural conditions, Mr. Shakespeare said that the Government had allocated £1,000,000 for schemes for rural areas, and already schemes for 1,100 parishes costing £3,200,000 had been approved.

Defence Against Air Attack

On April 16th, Sir JOHN GILMOUR informed the House of Commons that a special Department of the Home Office, under an Assistant Under-Secretary of State, was being formed at No. 5, Princes Street, Westminster, to act as the channel for communicating to local authorities in England and Wales details of the measures necessary for them to take in organizing local services for safeguarding the civil population against the effects of air attack. The new Department would not be fully staffed until the beginning of May, and its first important duty would then be the issue to local authorities of a general circular outlining the Government's policy, and the directions in which their co-

operation would be required. Instructions on precautions to be taken by individual members of the public would follow. It was hoped to give fuller information to the House at a later date.

Inquiries into Local Government Systems

The Prime Minister, on April 17th, announced the appointment of two Royal Commissions to inquire into the local government system on Tyneside and in Merthyr Tydfil. The Tyneside Commission will consist of Sir Sidney Rowlatt (chairman), Sir Angus Scott, and Mr. C. H. Roberts; on the Merthyr Commission will be Sir Arthur Lowry and Mr. J. T. Richards.

Scabies in the Army.—Colonel Sir ARNOLD WILSON, on April 16th, asked if the attention of the Minister of Health had been drawn to a statement made in the Annual Report for 1932 on the Health of the Army that there had been a steady annual increase in scabies, an infectious parasitic disease, due to the fact that the condition was more prevalent than heretofore in the civil population; and whether he would institute inquiries as to the circumstances in which this infection, unlike all others of its kind, was increasing. Sir HILTON YOUNG said he knew the statement referred to, but he was not satisfied that there had been any increase in the prevalence of scabies in the civil population or that there was any need for special inquiries. The Report on the Health of the Army for 1933 stated that the steady annual increase in scabies referred to in the 1932 report appeared to have been checked. A fall of ninety-seven cases, from 765 (4.2 per 1,000) to 668 (3.6 per 1,000), was reported.

Medical Officers in Ceylon.—In reply to Captain Fuller, on April 17th, Sir PHILIP CUNLIFFE-LISTER said the Ceylon Estimates for 1930–1 made provision for 316 medical officers and twenty-seven medical officers of health. Those for 1934–5 made provision for 312 medical officers and twenty-five medical officers of health. These figures excluded, in both cases, staff and specialist appointments. They showed a total reduction of less than 2 per cent. between the earlier and later period.

Death following Fumigation.—On April 17th, Mr. WILL THORNE asked whether the Minister of Health had received a report from the coroner on the death of two children who died after the fumigation of their home at Aldershot; the cause of death; and whether the houses were properly examined before the occupants were allowed to take possession after fumigation. Mr. SHAKESPEARE replied that it was not the duty of the coroner to submit reports on these matters to the Minister of Health, but Sir Hilton Young had received a preliminary report from an officer of his Department who was present at the inquest. To this he was giving immediate consideration in consultation with the Home Office. The verdict was one of death from misadventure by cyanide poisoning. As regards the last part of the question Mr. Shakespeare referred Mr. Thorne to a rider attached by the jury to the verdict.

Cremation Regulations.—Captain ELLISTON asked the Home Secretary, on April 17th, whether he would sanction cremation by local authorities of bodies for the disposal of which they were responsible. Sir JOHN GILMOUR replied that Regulation 5 of the Cremation Regulations prohibited the cremation of human remains which had not been identified, and he could not see his way to amend this provision.

Birmingham Infectious Diseases Hospital.—On April 17th Mr. GROVES asked the Minister of Health how the authorities of the Birmingham City Infectious Diseases Hospital were able to compare the incidence of infectious diseases in their nurses for former years with the incidence for the years 1932 and 1933 if the earlier records were not available; and whether any classified records were available for each of the years 1923 to 1932. Sir HILTON YOUNG said he understood from the local authority that, so far as general illness in nurses at the Birmingham City Infectious Diseases Hospital was concerned, classified records were not available for years earlier than 1932, but that full particulars were available as regards notifiable infectious diseases occurring among the nurses.

Medical News

The annual spring dinner of the Queen's University Club, London, will be held at the Dorchester Hotel, W., on Thursday, May 2nd, at 8 p.m., with the president, Dr. T. Carnwath, in the chair. Further information from the honorary secretaries, 101, Harley Street, W.1.

The University College (late Queen's College), Galway, North of England, and Midlands Alumni Association will hold its ninth annual medical reunion at the Queen's Hotel, Piccadilly, Manchester, on Saturday, May 4th, at 7.30 p.m.; dinner at 8 p.m. The subscription is one guinea, which includes the dinner, cost of organization, printing, etc. All Galway graduates are invited. Those who intend to come are requested to notify the honorary secretary, Dr. P. J. Webb, 127, Rochdale Road, Harpurhey, Manchester, 9.

Dr. C. S. Myers, F.R.S., will deliver a discourse on "The Scientific Approach to Vocational Guidance," at the Royal Institution, 21, Albemarle Street, W., on Friday, May 10th, at 9 p.m. Dr. Angus Macrae will give a demonstration of method as applied to an individual case.

Professor Neymann of Chicago will read a paper on "Treatment of Syphilis of the Central Nervous System" before the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on Tuesday, April 30th, at 5 p.m. At 8.30 p.m. on the same day there will be a special meeting of the Section of Pathology, at which Dr. Claus Jensen of the State Serum Institute, Copenhagen, will read a paper on "The 1934 Epidemic of Poliomyelitis in Denmark: Preliminary Report on the Epidemiology, Clinical Features, and the use of Convalescent Serum."

A course of lectures on pathological research in its relation to medicine will be given at the Institute of Pathology and Research, St. Mary's Hospital, W., on Thursdays at 5 p.m., from May 2nd to June 20th inclusive. The lectures are open to all members of the medical profession and to all students in medical schools, without fee.

A meeting of the medical section of the British Psychological Society will be held at the Institute of Psycho-Analysis, 36, Gloucester Place, Portman Square, W.1, on Wednesday, May 1st, at 8.30 p.m., when Dr. W. R. Bion will read a paper on "Psychological Asepsis."

A post-graduate course on internal secretions will be held at Bad Kudowa from May 18th to 20th, when lectures will be given by Bastanier, von Bergmann, Munk, Schultz, and Wagner of Berlin, Grote of Dresden, Gutzeit and Parade of Breslau, Kötschau of Jena, and Nonnenbruch of Prague. Further information can be obtained from Badeverwaltung Kudowa, Nachodstr. 8, Berlin, W.50.

A series of post-graduate clinical demonstrations, under the auspices of the University of Durham College of Medicine, will be given at Newcastle General Hospital on Sundays from April 28th to June 23rd (with the exception of Whit Sunday, June 9th).

The Fellowship of Medicine (1, Wimpole Street, W.) announces that a course in dermatology will be given at St. John's Hospital from April 29th to June 2nd, also a course in medicine, surgery, and gynaecology at Royal Waterloo Hospital, from April 29th to May 11th. A week-end course in cardiology (especially suitable for general practitioners) will be given at City of London Hospital, Victoria Park, E., on May 4th and 5th. Other week-end courses include diseases of the chest at Brompton Hospital, May 11th and 12th; obstetrics at City of London Maternity Hospital, May 25th and 26th; fevers at Park Hospital, Hither Green, S.E., June 15th and 16th. Forthcoming courses include thoracic surgery at Brompton Hospital, May 13th to 18th; an M.R.C.P. course at Brompton Hospital during June; an evening M.R.C.P. clinical and pathological course, on Tuesdays and Thursdays at 8 p.m., at National Temperance Hospital from June 11th to 27th; and an evening M.R.C.P. course in chest and heart diseases

at Victoria Park Hospital, June 5th to 21st. With the exception of the dermatology course at St. John's Hospital, courses arranged by the Fellowship are open only to members and associates.

An International Congress of Roman Catholic Medical Practitioners, organized by the Belgian Medical Society of St. Luke, St. Cosmas, and St. Damien, will be held in Brussels from May 29th to June 4th. Further information can be obtained from the Secretariat, 14, Rue Blanche, Brussels.

The Earl of Malmesbury, chairman of the Hampshire County Council, will preside over the next health congress of the Royal Sanitary Institute, to be held at Bournemouth from July 15th to 20th.

A plaque in memory of Dr. Irene Clarke, whose death was announced in our issue of July 28th, 1934, was unveiled by Lady Frances Smith at the Acton Hospital on April 16th. After the ceremony a cheque for £1,000 was presented to the secretary of the hospital by Dr. Thomas W. Clarke, *M.C.* (husband of Dr. Irene Clarke), on behalf of Mrs. Higgie (Dr. Clarke's mother) and himself, towards the hospital extension. The donation was made for the special purpose of improving the accommodation for children, in whose welfare Dr. Irene Clarke was particularly interested.

Owing to illness Dr. Alfred Adler will be unable to deliver the three public lectures at the Conway Hall on April 29th, May 1st and 3rd.

On May 2nd, at 2.30 p.m., a demonstration of the use of a variety of contraceptive methods will be given at 106, Whitfield Street, Tottenham Court Road, W. Previous application for tickets (which will be supplied to medical practitioners and senior students only) should be made in writing to the honorary secretary, C.B.C., at the address given above.

The House Committee of the Royal Victoria Infirmary, Newcastle-on-Tyne, has provisionally allocated one and a half acres of ground at the north-west corner of the Infirmary site for the contemplated erection of a new maternity hospital, to replace the present Princess Mary's. Radical improvements to the Princess Mary buildings are well known to be necessary, and various health authorities have decided that, from the point of view both of convenience and of healthiness of site, it is desirable to move it completely to Queen Victoria Road.

The issue of *Bulletin Médical* for March 30th is devoted to arterial hypertension.

The organizers of the Birmingham hospitals centre, of which the Prince of Wales laid the foundation stone last October, have issued a further list of contributions, making a total of £740,000 towards the £1,000,000 needed for the first and largest part of the scheme.

The treasurers of St. George's Hospital have received a gift of £10,000, spread over seven years, towards the rebuilding and endowment fund for the new hospital at Hyde Park Corner on condition that the name of the donor shall remain anonymous.

After allowing for legacies, and subject to life interests, the residue of the property of the late Mr. R. M. Roe of Brockley, S.E., who left net personalty of £18,473, goes to Guy's Hospital, to be called the Sir Alfred Fripp Trust, in memory of the late Sir Alfred Fripp.

Geh. Med.-Rat. Dr. Ferdinand Graf von Spee, formerly professor of physiological anatomy and embryology at Kiel, celebrated his eightieth birthday on April 5th.

Colonel Thomas Fraser, C.B.E., D.S.O., T.D., M.B., Ch.B., has been appointed a deputy lieutenant for the county of the city of Aberdeen.

The corrected statistics of notifiable diseases throughout the world for the year 1932 have recently been published by the Health Section of the League of Nations. The volume also contains a detailed list of the notifiable diseases in various countries.

Dr. L. Dekeyser has been elected president of the Association of the Belgian Medical Press for 1935.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Cracked Upper Lip

"B. G." writes: I should be grateful for suggestions as to treatment for a crack in the median line of the mucous membrane of the upper lip, just opposite the alveolar margin. This has persisted for a year. It has been treated with silver nitrate, copper sulphate, ung. hydrarg. nit. dil., and simple ointments, and the upper vulcanite denture has been altered but, though it occasionally seems to heal, it always opens up again in a few days. There does not appear to be anything malignant about it.

Unilateral Spasms in the Newly Born

"D." asks for suggestions with regard to the following case. A healthy young primipara delivered herself, after normal labour of six hours' duration, of a child which was perfectly normal and weighed eight and a half pounds. Twelve hours later the child developed clonic spasms of the left side of the face, the left arm, and the left leg. These spasms continued for three days, and then ceased suddenly. The only other signs present were an uncountable pulse and pin-point pupil of the left eye. The grandmother stated that eleven of her fifteen children showed exactly the same symptoms, and nine of them died. She further stated that in her husband's family this condition had been seen, and was thought to have come from his mother, who suffered from epileptic fits. As "D." is unable to find any reference to this condition in literature, he invites the comments of neurologists on this case.

Income Tax

Cash Basis—Bad Debts

"E. S." inquires whether it is a fact that under the cash basis system no allowance is made for bad debts?

*** No special deduction is made for bad debts, but that is because the allowance is automatic. As only amounts actually received are included in the gross income of the practice it follows that the net profits, after deduction of the expenses, do not need to be further reduced by any estimate for "bad debts"—in fact, the exclusion of that difficult question is the main advantage of the "cash basis."

Cost of Travelling

"S. H.," who holds a hospital appointment, acted also temporarily for a colleague at another hospital. The cost of travelling between the hospitals has been disallowed on the ground that it was not incurred *in* carrying out the duty of either appointment.

*** The refusal is founded on judicial decisions and is good in law, though harsh in its application to "S. H."

Obsolescence Allowance of Car

"G. P. N." replaced his car in 1929-30 and then claimed to deduct the cost of replacement, and in consequence was debarred from claiming "depreciation" allowance on the car then purchased for £302 for 1930-1. In February, 1935, he sold that car for £38 and bought a second-hand car for £195. What can he now claim (*a*) in respect of obsolescence, and (*b*) for depreciation of the new car?

*** (*a*) The obsolescence allowance due as an expense of the year to March 31st, 1935, is £143 as calculated by "G. P. N."—that is, on the basis of deducting from the £302 cost the appropriate depreciations at 20 per cent., excluding the "barred" allowance for 1930-1. As regards private use—now 1/5, formerly 1/3—this should strictly be averaged out over the full period, but the authorities may not take that point against "G. P. N.," and in any case the difference would not be substantial. Depreciation can be claimed for 1935-6 on the full £195, as it is the "replacement" and not the "obsolescence" deduction that bars the depreciation allowance for the following year.

Hospital Appointment—House Free

"M. B." is a whole-time pathologist, receiving a salary and being provided with a house rent and rates free; he is not allowed to live elsewhere. His emoluments have been notified to the income tax authorities by the hospital as "salary, £*x*—allowance house."

*** "M. B." is not liable to account for tax on the value of the rent and rate free accommodation which he has to use. It would be otherwise if he had an inclusive salary, from which the hospital deducted an amount representing that value. That distinction sometimes causes confusion.

LETTERS, NOTES, ETC.

Motor Backache and Neuralgia

"G. H. O" writes: My small contribution to the above subject, although specially directed to "G. H. A." (October 27th, 1934, p. 791), should be a help to all car drivers, especially those who, like myself, are under average height and build. All driving seats must of necessity be constructed to accommodate the full-sized man; in consequence the smaller man (including, of course, the majority of women) cannot be comfortably "placed" and within easy reach of pedals, etc., unless there is a satisfactory adjustable seat. Even then the undue modern tilt is calculated to produce the symptoms described by "G. H. A." (A patient of mine, who almost lives in his car, developed a severe and most obstinate sciatica from the same cause.) Moreover, the present low setting of all cars has gone to extremes, hampering driving facility by restricting visibility, and thus constituting a danger, especially when driving on narrow, rough country roads. I have had no experience of "bucket" seats, all my cars having been single-seater coupés. But during the last fifteen years with each car purchased I have always got the motor trimmer to stitch, tack, or dome-fasten a flap of leather over the back of the driving seat, this being so loose as to stand out at least six inches in the middle. Under this flap I slip an air cushion, size about 18 inches by 12 inches, which is inflated with an ordinary tyre pump. As an extra aid (for short people) I have a flat leather cushion to sit on. Besides adding immensely to comfort and facilitating the various manœuvres entailed in driving, these more or less fixed cushions protect that part of the seat which suffers most wear. But it is a *sine qua non* that the back support must be "anchored" in some such way as that described above.

Treatment of Haemoptysis by Congo Red

Dr. N. M. SHAH (Nakuru, Kenya) writes: Dr. de Silva, writing in the *Journal* of January 5th (p. 46), points out a way to meet the difficulty in the intravenous injection of Congo red by first inserting a needle in the vein and letting a few drops out, to make sure that it is actually in the vein. Although it may be a good method for the novice, a better method for a little-experienced hand would be to insert the needle in the vein as usual and try to draw out the blood. Although the actual presence of blood cannot be made out on account of the colour of the injection fluid, yet the characteristic feel which one experiences when the blood is being sucked in is, to my mind, quite sufficient to determine the actual presence of the needle in the vein. I have tried this method with perfect success and satisfaction in giving the intravenous injections of the black preparations such as silver salvarsan, etc., and also when the usual intravenous injections are given by sucking in the blood off and on with the double object of diluting the injection fluid and making sure every time that the needle is actually in the vein all the time. With this technique there would be no difficulty at all in the injection, as the writers of the original article thought.

Pre-natal Murmurs

"G." writes from New Zealand with reference to the letter by Dr. Henry Robinson (October 27th, 1934, p. 791) on pre-natal cardiac murmurs: I am also in a quandary, and in no subsequent *Journal* can I see any explanation of such an anomaly. Over ten years past I detected, ante-natally, a definite foetal heart murmur about a week before birth; I remarked on the condition to the midwife present, and true enough this "blue baby" lived only three or four days. (It was a girl and the third child.) At one of my recent cases, although ante-natal auscultation revealed no abnormality, a weakly baby boy (the sixth in this case) was delivered. Being unable to suck, and the "windiest" baby I ever saw, it was difficult to feed. Subsequent examination showed a definite congenital heart, later confirmed by a specialist, under whose guidance this child (now 6 months old) is making progress, although still very pale and puny.

Insulin Prices

Allen and Hanburys Ltd. and the British Drug Houses Ltd. inform us that the prices of insulin "A.B." (jointly manufactured by them), which were reduced about a year ago, have again been reduced to a considerable extent. The following table shows the reductions:

Strength in Units per c.cm.	Contents of Phial	Old Price	Recent Price	New Price
20	5 c.cm. (100 units)	2/-	1.10	1/6
	10 ,, (200 ,,)	4/-	3.6	2.10
	25 ,, (500 ,,)	10/-	8.6	6/10
40	5 ,, (200 ,,)	4/-	3.6	2/10
80	5 ,, (400 ,,)	8/-	6/9	5/6

A Warning

"M. D." writes from Wales: A group of three women, one man, and a small child of about 2½ is travelling in a somewhat worn blue American saloon car. They have the appearance and dress of Indians. The small child was brought here on Sunday afternoon and was said to be sick with diarrhoea and passage of bloody motions. Although unable to detect any signs of disease, I provided a remedy of kaolin. The charm and gratitude of the mother was extreme—she begged to read my hand and to bless my fortunes. The process included abstraction and blessing of the treasury notes in my wallet. By this time you will be prepared to hear that some £5 failed to return to their rightful place. I may say that I watched her movements carefully and have to admit her great skill. The police were very sympathetic and apparently knew all about this talented family, who may now be approaching the soft side of some of my colleagues.

Corrigenda

We are asked by the Secretary of the Devon and Exeter Medico-Chirurgical Society to make the following corrections in his report of the meeting published in our last issue at page 850: Dr. Charles Seward's name was misspelt "Seaward"; the figures in the sentence beginning "Sugar tolerance was diminished (2.22 for the first hour) . . ." should be 0.22; and "blood urea, 3 per cent." should read "blood urea, 36 per cent."

Two slips occurred in the annotation headed "International Ophthalmology" (April 20th, p. 834). Professor de Grósz should have been described as of Budapest, and the name of Dr. Park Lewis was misspelt.

In our report of the eleventh sitting of the Select Committee on the Osteopaths Bill (*Journal*, April 13th, p. 788, col. 1, line 31) the name Sheen should read Chiene.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 42, 43, 44, 45, 46, 47, and 50 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48 and 49.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 204.